Jolanta Latkowska

The Language-Cognition Interface in Bilinguals:

An evaluation of the Conceptual Transfer Hypothesis

Wydawnictwo Uniwersytetu Śląskiego ■ Katowice 2013

The Language-Cognition Interface in Bilinguals:

An evaluation of the Conceptual Transfer Hypothesis

NR 3049

Jolanta Latkowska

The Language-Cognition Interface in Bilinguals:

An evaluation of the Conceptual Transfer Hypothesis

Wydawnictwo Uniwersytetu Śląskiego Katowice 2013

Editor of the Series: Językoznawstwo Neofilologiczne
Maria Wysocka

Referee
Mirosław Pawlak

Table of contents

Acknowledgements 9

Introduction 11

1. The architecture of the bilingual mental lexicon 15
1.1. The Hierarchical Model of Bilingual Memory 15
1.1.1. Unity of the semantic and conceptual levels 17
1.1.2. Separation of semantic and conceptual representations 19
1.2. The concept of concept 21
1.2.1. Feature listings 22
1.2.2. Prototypes 23
1.2.3. Frames 26
1.2.4. Conceptual metaphor and image schemas 27
1.2.5. Grounded cognition 30
1.3. Lexical(ized) concepts 31
1.4. Analysing lexicalized concepts: Natural Semantic Metalanguage 36
1.4.1. Semantic explications 39
1.4.2. Semantic molecules 40
1.4.3. Neo-Whorfianism, Wierzbicka style 41
1.5. Language-mediated processes in the bilingual lexicon 42
1.5.1. Lexical and semantic transfer 42
1.5.2. Conceptual transfer 45
1.5.2.1. Linguistic relativity 45
1.5.2.2. The Conceptual Transfer Hypothesis 47
1.6. Conclusion 47

2. Linguistic relativity 49
2.1. The Sapir-Whorf Hypothesis: Perspectives from research design 49
2.1.1. The domain-specific approach 50
2.1.2. The structure-centred approach 55
2.1.3. The bilingual perspective 57

2.2. The Thinking for Speaking Hypothesis . . . 62
2.2.1. Background to the Thinking for Speaking Hypothesis: Talmy's typology of motion verbs . . . 63
2.2.2. Critique of Talmy . . . 65
2.2.3. Directed motion in Polish . . . 67
2.2.4. The Whorfian dimension of Thinking for Speaking . . . 71
2.2.5. Thinking for Speaking effects in gestural communication . . . 74
2.2.6. Bilingual research . . . 75
2.3. Conceptualization via event construal: The von Stutterheim paradigm . . . 79
2.3.1. Processes of conceptualization . . . 80
2.3.2. Evidence from Slavic languages . . . 85
2.3.3. Conceptualization in bilinguals and second/foreign language learners . . . 87
2.4. Linguistic relativity: General perspective . . . 90
2.5. Conclusion . . . 98

3. The Conceptual Transfer Hypothesis . . . 100
3.1. Assessing the scope of the phenomenon . . . 101
3.2. Issues in investigating the linguistic/non-linguistic interface . . . 102
3.3. Methodological concerns . . . 105
3.4. The linguistic dimension . . . 110
3.5. Conclusion . . . 114

4. Study 1: Investigating semantic and conceptual categorization in the domain of interpersonal relationships in Polish and English . . . 115
4.1. Naming interpersonal relationships in Polish and English . . . 117
4.2. Study 1a . . . 121
4.2.1. Research questions . . . 122
4.2.2. Participants . . . 122
4.2.3. Materials . . . 124
4.2.4. Procedure . . . 130
4.2.5. Analysis . . . 131
4.2.6. Results . . . 132
4.2.6.1. Intra-group variables . . . 154
4.2.6.2. Category core features . . . 158
4.2.7. Discussion and summary of findings . . . 160
4.2.7.1. Bilingual categorization patterns in the L2 . . . 160
4.2.7.2. Bilingual categorization patterns in the L1 . . . 162
4.2.7.3. The processes at work in the bilingual lexicon . . . 163
4.2.7.4. The L2 and L1 in natural and formal learning contexts . . . 165
4.2.7.5. Factors influencing naming patterns in bilinguals . . . 167
4.2.7.6. On the application of Natural Semantic Metalanguage and linguistic analyses in research into semantic and conceptual levels . . . 169
4.3. Study 1b . . . 172
4.3.1. Research objectives . . . 172
4.3.2. Participants . . . 173

4.3.3. Materials . . . 173
4.3.4. Procedure . . . 174
4.3.5. Analysis . . . 175
4.3.6. Results and discussion . . . 175
4.3.7. Conclusion . . . 180

5. Study 2: Conceptualization in event construal. The case of Polish-English bilinguals . . . 181
5.1. Study 2a . . . 183
5.1.1. Selection . . . 183
5.1.2. Research objectives . . . 184
5.1.3. Participants . . . 185
5.1.4. Materials . . . 186
5.1.5. Procedure . . . 187
5.1.6. Analysis . . . 187
5.1.7. Results . . . 189
5.1.8. Discussion . . . 200
5.1.8.1. Selection: A cross-linguistic analysis . . . 201
5.1.8.2. The setting of L2 learning and use . . . 202
5.1.8.3. The influence of individual background variables . . . 203
5.1.8.4. Implications for conceptualization processes . . . 204
5.1.9. Conclusion . . . 204
5.2. Study 2b . . . 205
5.2.1. Segmentation . . . 205
5.2.2. Structuring . . . 206
5.2.3. Research objectives . . . 208
5.2.4. Materials and procedure . . . 208
5.2.5. Analysis . . . 209
5.2.5.1. Segmentation units . . . 209
5.2.5.2. The event/state distinction . . . 210
5.2.5.3. Temporal structuring . . . 211
5.2.5.4. Statistical analysis . . . 212
5.2.6. Results . . . 212
5.2.7. Discussion . . . 232
5.2.7.1. Event segmentation: A cross-linguistic perspective . . . 232
5.2.7.2. Temporal structuring in Polish and English . . . 233
5.2.7.3. The setting of L2 learning and use . . . 234
5.2.7.4. The influence of individual background variables . . . 236
5.2.7.5. Implications for conceptualization processes . . . 237
5.2.8. Conclusion . . . 238

6. Concluding remarks . . . 240
6.1. Theoretical issues and suggestions for future research . . . 240
6.2. Practical implications of Studies 1 and 2 . . . 243
6.3. Evaluation of the research . . . 246

Appendix 248

Bibliography 259

Index 279

Streszczenie 281

Zusammenfassung 282

Acknowledgements

I would like to thank several people who offered invaluable help and guidance at various stages of writing this book.

I am most grateful to David Singleton of Trinity College Dublin and Jean-Marc Dewaele of Birbeck College London for providing access to college facilities during the data collection stage.

The person I am academically most indebted to is Professor Maria Wysocka, whose unwavering support and encouragement were instrumental in bringing this project to completion.

Thanks are also due to Agnieszka Skrzypek for her help with library research and the statistical analysis of the data.

Finally, special thanks go to the participants of this study, many of whom gave up their time to take part in the testing sessions and fill in the questionnaires.

Introduction

The literature on bilingualism abounds in reports of individuals who on learning to speak another language acquired a new perspective on life, a new mode of thinking and responding to the world at large, and a new blueprint for expressing themselves and understanding others (Grosjean 1982; Hoffman 1989; Pavlenko 2003, 2005; Wierzbicka 1997, 2005, 2008). Apart from ecological validity manifesting itself in the personal testimonies of numerous bilinguals, and indeed the histories of bilingual communities, these reports must have an empirical basis. The Conceptual Transfer Hypothesis provides a suitable testing ground for probing the language-thought interface, and thus interpreting the experiences of so many. However, to have explanatory power, the hypothesis needs theoretical and empirical validation. Accordingly, this project evaluates the claims of the hypothesis by examining relevant theoretical positions and conducting research based on its recommendations.

The book opens with an overview of theoretical positions and pertinent research concerned with the architecture of the bilingual mental lexicon and levels of representation. Accordingly, special attention is paid to the question of whether semantic and conceptual representations constitute one and the same level or two separate ones, and to theories of concepts that have evolved over the years as a result of intensive research and theoretical speculation. These encompass the idea of lexicalized concepts, i.e. conceptual representations with lexical labels, which is subsequently elaborated on through the prism of Anna Wierzbicka's Natural Semantic Metalanguage (NSM) and semantic explications.

The bilingual mental lexicon maintains its functionality due to linguistic and non-linguistic processes operating within and across its various levels. Some of them are assumed to function at the language-cognition interface, bringing into existence what Jarvis and Pavlenko (2008) have termed *conceptual transfer*. As it involves cross-modal influence of linguistic categories on cognition, the discussion focuses on language-mediated processes within the lexicon, including those predicted by the Theory of Linguistic Relativity and its modified versions in the form of the Thinking for Speaking Hypothesis (Slobin 1996, 2003) and von Stutterheim's

Event Conceptualization Paradigm (von Stutterheim 2003). The theoretical overview ends with a chapter devoted to the Conceptual Transfer Hypothesis proper and an evaluation of its theoretical and empirical bases. This constitutes a springboard for research which was conducted in accordance with the recommendations of the hypothesis and is presented in Studies 1 and 2.

Study 1 takes as its point of departure Wierzbicka's (1997) explications for friendship terms in Polish and English. Because the explications are hypothesized to illustrate prototypical cognitive scenarios and thus show the thinking behind particular words, Wierzbicka argues they reflect underlying conceptual categories. Study 1a examines naming patterns through a set of explication-based scenarios in each of the participants' languages. The obtained data are used for inter- and intra-group comparisons to assess the influence of bilingualism and the context of L2 learning and use on verbal categorization in the L1 and L2. Study 1b examines correlations between verbal categorization and similarity judgments.

Study 2 explores pre-linguistic conceptualization, drawing on a dataset collected during a film-retelling task. The study is based on a four-stage model developed by Habel and Tappe (1999) and modified by von Stutterheim and Nüse (2003). Study 2a focuses on the selection stage of conceptualization and examines the process in terms of Slobin's Thinking for Speaking Hypothesis (Slobin 1996) and Talmy's (2000, 2003) typology of verbs of motion. Structuring and segmentation are investigated in Study 2b, which is based on von Stutterheim's Event Conceptualization Paradigm. The study has a comparative character and uses both bilingual and monolingual data.

The concluding chapter appraises the strengths and weaknesses of the project and expands on its practical merits, as well as looking at areas in need of clarification and improvement. It also suggests some avenues for future research and L2 learning, thus highlighting those cognitive and linguistic processes that previous research did not seem to be aware of.

The interpretations proposed in this work are consistent with the theory of multi-competence (Cook 2003) and the Dynamic Model of Multilingualism (Herdina and Jessner 2002), which, for reasons of space, have not been presented here. Following Pavlenko (1999, 2005), the terms *bilingual memory* and the *bilingual mental lexicon* are used interchangeably, while the abbreviation SLA refers to both second and foreign language learning. Whenever relevant, the type of L2 learning and use is specified by means of terms such as *immersion*, *naturalistic*, *formal* and *foreign* language learning. Small capitals denote cognitive/conceptual categories, members of categories, image schemas and metaphors. Despite the criticism that the notion of the *native speaker* has received from bilingualism-oriented researchers (Cook 2003; Davies 2006; Romaine 1995), it has been applied a few times in this work for lack of convincing alternatives and for stylistic reasons. A related term and more precise yardstick for evaluating bilinguals is the socially and educationally comparable *monolingual*, which has been used in contexts where it ensured clarity and precision

of description. As regards *bilingualism*, the way the word is applied in this book corresponds to the definition set forth by Weinreich (1953), who saw bilingualism as an alternate use of more than one language. Since both the immigrants and the students participating in this research had advanced proficiency in L2 English and used the language for (various forms of) communication regularly, it is assumed that they met the definitional criteria and were bilingual. Finally, earlier drafts of some of the sections in Chapters 1 and 2 have been presented elsewhere as work in progress (Latkowska 2009, 2010, 2011*).

* Reprinted with kind permission of Springer Science and Business Media.

Chapter 1

The architecture of the bilingual mental lexicon

To understand the workings of the bilingual mind, it is necessary to explore its organization in terms of the forms and levels of representation and their mutual dependencies. Doing so will help establish a basis for an evaluation of the Conceptual Transfer Hypothesis (Jarvis and Pavlenko 2008), which draws inspiration from the Hierarchical Model of Bilingual Memory, as advanced by Kroll and Tokowicz (2001) and Paradis (2004). To view the hypothesis in a broader perspective, this chapter presents the current thinking on aspects of linguistic representation and its conceptual underpinning, as well as the interactions within and across representational levels in the mental lexicon. It also points at the implications of these processes for language use and cognition.

1.1. The Hierarchical Model of Bilingual Memory

The prevailing view in the psycholinguistic literature is that the bilingual lexicon has a two-layered (hierarchical) structure formed from the lexicon, either integrated or separate, and a semantic/conceptual store which is shared by both languages. Access to the lexicon(s) appears to be non-selective (Kroll and Sunderman 2003), with orthographic and phonological word forms being activated in both languages in accordance with the stimulus properties and L1/L2 proficiency, but irrespective of the bilingual's intention to use just one code. As regards production, bilinguals seem to have little control over the activation of the language they do not intend to speak. Translation equivalents and related words are activated before speaking even when the bilingual aims to speak one language only (Kroll and Sunderman 2003). The non-selective access and joint activation of both languages may be interpreted as evidence of lexical integration, at least for languages that are typologically related and formally similar (Van Heuven et al. 1998). However, it is assumed that the bilingual's lexicons are separate but interconnected. The empirical basis for this proposal is the lack of long-term repetition priming for translation equivalents.

That is, seeing the word *chien* in French does not facilitate recognition of its English equivalent *dog*. Also, bilinguals have no trouble remembering the language of words in language recall tasks and are not distracted by previously learned vocabulary upon switching to their other language during word memorization (French and Jacquet 2004).

Lexical separation is the main premise of the Revised Hierarchical Model to the effect that a translation pair like e.g. *apple*/*jabłko* is hypothesized to have three components in bilingual memory: the L1 and L2 word forms and a shared meaning (de Groot 2013; Francis 2005; Kroll 1993; Kroll and Stewart 1994; Kroll and Tokowicz 2005; Paradis 2004). As most bilinguals are more proficient in one language, typically the first one, there is an asymmetry both in the size of the lexicons and in the strength of the connections between them (de Groot and Kroll 1997; Kroll and Stewart 1994; Kroll and Tokowicz 2005). The L2 is less well developed on account of being acquired later in life. The model also postulates a developmental shift from lexical association for the L2, which initially may only be accessed through the L1 lexicon, to direct concept mediation, a function of growing proficiency in the L2. This in turn explains why the links connecting the lexicons to each other and to the semantic level are stronger for the L2 to L1 processing than in the opposite direction, i.e. from the L1 to the L2 (see Figure 1). Such a portrayal of the dynamics of L2 growth makes the model particularly relevant to L2 teaching practice.

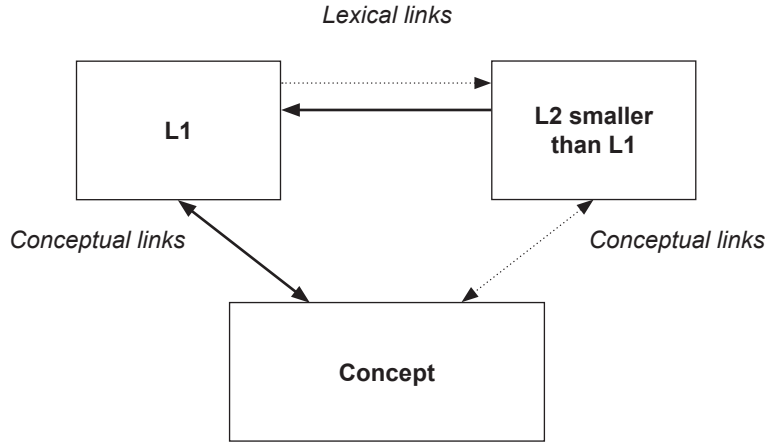

Figure 1. The Revised Hierarchical Model (based on Pavlenko 2009)

The assumption that both languages share a common semantic/conceptual base is derived from the results of reaction time studies. They confirm that functional translation between languages is relatively easy and natural for most bilinguals. However, since the research used mainly isolated concrete words, caution is advised in making generalizations from this finding. Additional backing for integration

comes from cross-language semantic priming and from the fact that semantically related words from both languages interfere with picture naming in either language. Finally, L1 meanings tend to be transferred to the L2 during L2 learning (Kroll and Sunderman 2003).

Opinion is divided about the nature of semantic and conceptual representations whose relationship remains the subject of much speculation (cf. Francis 2005; Pavlenko 1999). Presented below are two opposing positions on this issue, as well as some arguments supporting each view.

1.1.1. Unity of the semantic and conceptual levels

Central to this position is the assumption that the semantic and conceptual levels are merged, and as such contain information about word meanings and concepts, both linguistic and extra-linguistic (Francis 2005). From a theoretical perspective, a standpoint like this implies that analysing linguistic meaning is the same thing as studying the underlying conceptual structure. According to Langacker (1987: 98), the conceptual structure represents our "thoughts, concepts, perceptions, images, and mental experience in general." Simply put, the meaning of *a car* is the concept developed for the car. This in turn justifies the use of decontextualized words in related psycholinguistic research.

The Distributed (Conceptual) Feature Model proposed by de Groot (1992, cited in de Groot and Kroll 1997) specifies the contents of the joint semantic/conceptual level, and thus accounts for some of the concreteness and cognate effects observed in reaction time translation designs. To this end, it states that semantic/conceptual representations contain sets of primitive meaning elements or semantic features that determine the meaning(s) of words in a particular language. The extent to which these features overlap in a pair of translation equivalents delimits the degree of semantic equivalence for these words. By analogy, concepts are represented "as constellations of activated semantic features" (Kroll and Sunderman 2003: 111). Furthermore, the degree of interlingual semantic/conceptual overlap is governed by the lexical category the words belong to. Concrete nouns and cognates have similar referents with attributes that coincide across languages, and hence give shorter response times. Abstract nouns and, to some degree, non-cognates are more diverse, and hence share and/or activate fewer semantic features. This is why abstract words seem to be more difficult to translate and are more context- and culture-dependent in both comprehension and translation (Kroll and Tokowicz 2005). They also produce longer response latencies. Finally, the theory acknowledges the existence of language-specific meanings; that is, all the features that are not shared by a particular pair of translation equivalents. To its detriment, the model makes no distinction between written and spoken language and lacks a developmental nature that would allow an account of cognitive operations within the lexicon.

One frequent criticism of the unitary position (cf. Pavlenko 1999) is that it fails to differentiate between linguistic meanings and non-linguistic concepts. In response, de Groot (2000) argues that the task of separating conceptual and semantic representations, as well as defining the differences between them may be tedious and infeasible. This is because both are derived from experience with words and the surrounding environment, and as such both reflect internal thought processes and interaction with the world at large (Lakoff 1987). Moreover, attempts to define *word meanings* as sets of relevant semantic features are, in her view, doomed to failure since it is possible to provide convincing and all-inclusive definitions for very few words (de Groot 2000). Recent evaluations of componential analysis also stress this point (Kövecses 2006).

To resolve this dilemma, Francis (2000, 2005) proposes a compromise solution, stating that semantic representations are a subset of all concepts. She further explains that even though there are more concepts than words, every concept can be expressed in human language either as words or as sentences (Francis 2005). Semantic representations or word meanings are those concepts that these words refer to. An alternative explanation is that word meanings are a particular type of concept or "fragments of conceptual structure" (Jackendoff 1994: 131), or indeed "mappings of verbal labels to their concepts" (Francis 2000: 14). Accordingly, those word meanings that are linked to specific concepts are referred to as lexical or semantic concepts, while other concepts are non-linguistic (Roelofs 2000).

A clarification is also in order as to the research techniques used to explore this issue. These comprise designs making use of reaction times to targets that require either lexical or conceptual processing. The former type of access is investigated through data-driven tasks such as word-decision or fragment completion. Tests like these concentrate on the surface features of vocabulary, i.e. phonology and morphology, and activate those memory structures that are responsible for their processing. Conceptual processing is examined through tasks that tap the semantic/conceptual information associated with the target (de Groot 2002). Typical conceptually-driven tasks encompass free recall of words presented earlier, semantic categorization according to a set of criteria, e.g. concrete/abstract, picture naming, semantic priming, as well as forward and backward translation. Even though these tasks are said to be conceptually-driven, they do nevertheless require subjects to make a linguistic response inevitably involving both semantic and conceptual representations. This understandably adds fuel to criticisms that the methodology does not allow a distinction between word meanings and related concepts. It is this lack of systemic differentiation that, according to Jarvis and Pavlenko (2008) and Pavlenko (2009), makes reaction time designs suitable only for monolingual lexis-oriented research where one can expect direct concept-meaning mappings. Yet another limitation of the methodology is that it can only target lexizalised concepts.

Overall, the view that there is a unity between semantic and conceptual representations has been voiced mainly by classical cognitive linguists and

psychologists. Its leading proponents on the linguistics side include Aitchinson (1997), Fodor (1975: 530), Jackendoff (2002), Kövecses (2006), Lakoff (1987), Langacker (1987: 5), Levelt (1999), and Wierzbicka (1996). Strong unitary influences may also be observed in second language acquisition research where think aloud protocols have been used to investigate mental operations underlying language tasks (Gabryś-Barker 2005; Singleton 1999).

It cannot escape notice, however, that the separatist position is gaining ground as evidence from a variety of research designs and branches of linguistics continues to accumulate. Some of their arguments are presented in the following sections.

1.1.2. Separation of semantic and conceptual representations

Following Chomsky (1991) and Levinson (1997), who argue for a complete separation of language and cognition, this position advances the view that concepts, as instantiated by thought, and language are separate (Nuyts and Pederson 1997) and constitute independent levels of representation (Evans 2009; Gentner and Goldin-Meadow 2003). Partial support for this stance comes from the field of representational semantics which has long recognized that there is more to meaning than reference (denotation), and that in order to understand the complexity of situated language use it is necessary to rely on the mental models (representations) of the situation at hand (Saeed 2003). Accordingly, the principal question raised in this regard is whether, if at all, "the representations that underlie linguistic meaning, i.e. semantic representations," are the same as those that "underlie non-linguistic thinking, i.e. conceptual representations" (Levinson 1997: 15). This question was answered in the negative by Levinson (1997), who adopted an extremist stance and categorically ruled out the possibility that there might be some kind of conflation and/or unity between the two levels. He also rejected the subset relation (see Francis 2000, 2005) that affirmed the existence of lexicalized concepts. Levinson (2003a) softened his approach a few years later, however, by admitting that semantic and conceptual representations, though distinct, are closely related, at least at some level of representation.

Given the growing awareness of pragmatics and the popularity of contrastive cross-cultural studies, it comes as no surprise that his views are consistent with those voiced by some psycholinguistic and SLA circles (cf. Odlin 2005, 2010; Paradis 2004; Pavlenko 1999; Wolff and Malt 2010). What follows are some of the reasons why Levinson and like-minded researchers believe that the unitary camp "must simply be wrong" (Levinson 1997: 16).

Ontologically, the conceptual system develops before language and remains neurofunctionally independent of lexical semantics (Bowerman and Choi 2003; Paradis 2004; cf. Chomsky 1991). Moreover, both Paradis (2004) and Levinson (1997) stress the multi-sensory nature of thought (or concepts) which may be

accessed through a number of channels other than language. A case in point is the fact that memories of smells, tactile experiences, music and imagery are often stored in a non-linguistic form, and more often than not are difficult to verbalize. The reverse may also be true, namely, words alongside tactile, visual, auditory, etc. stimuli may activate the corresponding concepts. In the absence thereof, concepts are activated simply by being thought about. They can also be created following verbal explanations of phenomena that have not been experienced first-hand (Kecskes 2007). Furthermore, as Levinson (1997) observes, not every thought is (can be) verbalized and identical words may express different meanings or have different interpretations (cf. Bierwisch and Schreuder 1992). For instance, depending on geographical and other contextual parameters, *I saw some animals in the park* may be taken to refer to animals as different as squirrels and monkeys (Green 2000: 16) and even humans. This type of situational knowledge cannot be derived from language. Thought is specific and precise, while language often resorts to crude generalizations, as evidenced by indexicals: does *Tomorrow I'll leave for Paris* mean the same the following day? (cf. Levinson 1997: 19). Thought is often *gestalt*, while language, due to production constraints, remains linear.

The above arguments have roots in pragmatics, which, thanks to contextual clues, limits the number of possible interpretations that a particular word may have, making communication economical in the process. It is pragmatics that makes it possible for people to say less than they actually think and imply more than they actually say. This highlights the disparity between thought, as instantiated by communicative intention (illocutionary force), and language, as manifested by the semantic rendition of that intention. On the other hand, it is vital to remember that situational language use is shaped by meaning negotiation, speech redundancy, expectation-driven understanding, as well as a plethora of other factors that may potentially impact the effectiveness of verbal communication. One of them is the predominance of non-verbal signals. According to Morain (1986), they convey about 65% of meaning, thus supplementing the linguistic message in line with the underlying intention. Bearing this in mind, it is hard to resist the conclusion that generalizations about the character of human thought that have been derived from lexical/semantic forms outside the framework of face-to-face communication and models of meaning negotiation are bound to be premature and inaccurate (cf. Kramsch 2004). This conclusion assumes even more significance in the light of the fact that language has a social nature, and is therefore bound to be conventional. In practical terms, this means that the size of grammar and vocabulary needs to be limited to ensure both learnability and widespread use. In Levinson's (1997) view, human thought is not subject to such constraints.

A different tack has been taken by Wolff and Malt (2010) following their research into cross-linguistic variability in naming patterns. As they note, the observed lexical diversity in how languages refer to the same objects and actions gives reason to believe that word meanings encode aspects of experience selectively. Given that

languages showing considerable differences, both structural and semantic, have for centuries been used in similar geographical conditions, such diversity cannot be directly ascribed to contrasts in experience. Neither can it be attributed to pan-human cognitive and sensory mechanisms which are essentially uniform. Taken together, these facts indicate that the possibility of a direct and tight mapping between word meanings and concepts, i.e. isomorphy of the two levels, seems to be remote. In fact, Wolff and Malt believe that there must be more meanings than concepts and that the differences in meanings are greater than conceptual contrasts.

In sum, apart from its heuristic merits, the separatist position has opened up new avenues for research into bilingual memory. I strongly agree with Levinson (1997) that it is necessary for most branches of linguistics to join forces and devise methodology that would capture the multi-dimensional nature of conceptual representations and their relation to language(s). In this connection, it needs to be stressed that to date both the separatist and unitary positions have contributed significantly to our understanding of language per se and language use in monolingual and bilingual contexts by using study techniques that conformed to the rigour of empirical science. For this reason, despite their contradictory viewpoints, neither position should be dismissed lightly but instead each should be treated as complementary to the other, because each offers insights into specific language processing mechanisms under specific conditions.

1.2. The concept of concept

In order to fully understand the debate over the structure of semantic and conceptual representations, it is essential to look for insights and explanations in disciplines with an interest in the topic. Perhaps the most fitting description of the problem is that found in Barsalou (1993: 29), who observes that "the concept of concept is notoriously slippery, taking diverse forms not only across the cognitive science disciplines, but also across perspectives within disciplines." The sentiment expressed in this quotation takes its *embodied* form in the diverse theoretical depictions of concepts which include propositional systems (Jackendoff 1992), image-based models (Paivio 1991), symbolic systems of the signifier/signified type (Nuyts and Pederson 1997), prototypes (Rosch 1975), frames and schemata (Fillmore 1975; Johnson 1987), and simulators in grounded cognition models (Barsalou 2009). Opinions also vary in regard to the origin of concepts, with strong universalist proposals (Chomsky 1965; Comrie 1981; Jackendoff 1990; Wierzbicka 1996; Regier et al. 2005) standing out against experientialism (Lakoff 1987) and situated cognition (Barsalou 1993).

Given the highly divisive nature of this issue and the array of theories it instigated in domains such as psychology, linguistics and neuroscience, this chapter will only outline a few selected proposals advanced over the past forty years or so. The review

will not consider a number of prominent models within cognitive linguistics such as those of Fodor (1975), Jackendoff (1983, 1990), and Langacker (1987) because, due to their monolingual focus, they do not significantly contribute to debates on the contents of bilingual minds. Consequently, priority will be given to those frameworks which encompass language-mediated cognitive processes and whose scope has either been extended to or is directly applicable to bilingual cognition.

1.2.1. Feature listings

The discussion will start with classical semantic theory (Saeed 2003) which posits that the psychological construct, i.e. concept, developed for a word's denotation constitutes the meaning of the word. Such a concept is self-defining as it contains information about the necessary and sufficient conditions that set it apart from other concepts and give grounds for the identification and categorization of entities. What is more, the concept must be autonomous enough to allow people to discuss it without first-hand experience or knowledge of what it stands for. For instance, people often use words to refer to things they have never seen and know little about. Finally, the concept contains bits of cultural and encyclopaedic knowledge, similar to the type of information found in dictionaries. A concept corresponding to a single word is termed a *lexicalized concept*.

One of the practices adopted by classical semantics dates back to Aristotle and involves using words and phrases as feature labels to specify particular concepts. For example, a BANANA can be characterized as FRUIT<YELLOW<LONG<SWEET<MUSHY and the like (Barsalou 1993; Kövecses 2006). A similar list could be drawn up to designate the banana's necessary and sufficient features for the purpose of establishing its category membership. The number of necessary features, all of which have equal status, is fixed and shared by all the category members. Sufficient features guarantee category membership without constituting the category itself. For instance, being a mammal is a sufficient feature for a human. However, not all mammals are human.

Steeped in tradition, this view was challenged by the 20th-century philosopher Wittgenstein (1953), who, on analysing the concept of a GAME, came to the conclusion that the members of a conceptual category may share very few necessary features, perhaps only one or two. Still, this is enough to imprint on them a certain family resemblance. What also came to his notice was that some characteristics of concepts were more pronounced and typical than others and that concepts did not seem to have rigid boundaries (Kövecses 2006).[1] Other researchers raised objections

[1] This notion is rejected by Croft and Cruse (2004), who explain that the idea of fuzziness of natural category boundaries was conceived on the basis of similarity judgments made by different subjects under varying contextual conditions. The judgments involved responses to single lexicalized items which were often decontextualized. While category boundaries may vary from situation to

with regard to the precision of classical category definitions. One of the questions addressed was whether a three-legged dog was still a DOG if four-leggedness was one of its defining characteristics (Taylor 1995). Dissatisfaction with the theory was additionally reinforced by a growing awareness that feature listings and/or componential analyses were haphazard, incomplete and inaccurate (Singleton 1999). In bilingualism research, feature listings found their practical application in de Groot's (1992) Conceptual Feature Model.

1.2.2. Prototypes

Cognitive linguistics does not draw a clear-cut demarcation line between semantic and conceptual knowledge, either. In fact, it sees language as a lens for examining the conceptual domain. Regardless of this bias, it broadly defines a concept as both a psychological (mental) representation of a category and an abstraction containing everything an individual knows about a particular event, phenomenon, object or experience (Kövecses 2006). Drawing on this framework, Pavlenko (2005: 435) further explains that concepts "affect individuals' immediate perception, attention and recall and allow members of specific culture groups to conduct identification, comprehension, inferencing and categorization along the same lines."

An issue that has received a lot of attention from cognitive and like-minded linguists is the internal structure of concepts, which, as stated above, goes way beyond language-based characterizations. One of the adopted solutions is that conceptual knowledge is incorporated into prototypes and frames (Fillmore 1975; Kövecses 2006; Taylor 1995). Accordingly, to instantiate a category, an entity must represent the category's conceptual core (Taylor 1995) and amalgamate category features. These are no longer required to be necessary or sufficient. An entity with the highest number of attributes constitutes the prototype (Croft and Cruse 2004). In a sense, prototype theory is regarded as an alternative to classical semantics, as it attempts to provide an account of how conceptual attributes determine category membership.

Another possibility mentioned by researchers aligned to this framework is that concepts are composed of exemplars, i.e. actual memories of entities and phenomena encountered in life. The exemplars are linked to a category name in the form of memories, regardless of their number (Saeed 2003). What is more, since there is no abstraction across the exemplars, categorization is accomplished by means of comparison with all of the relevant memories (Verbeemen et al. 2007: 539). By contrast, Croft and Cruse (2004) believe that an exemplar is an ideal category. They also stress that similarity-based categorization seems better able to represent

---

situation, when judged in a specific context, the boundary is always sharp. A category boundary is defined as a demarcation line between the inside and outside of the category.

simple categories, such as colour and shape. Feature lists in turn are better suited for qualifying more complex concepts, e.g. a CAT. Since categorization is motivated by experience which is fragmentary, modality-dependent and subjective, prototype judgments show both inter-group and intra-group variability, with differences in culture, geographical situation and type of exposure playing a crucial role.

Concepts are organized into hierarchical networks conceived to function at three levels: the superordinate and subordinate one, and a basic or generic level in between. Items in the middle of the hierarchy display the most typical and/or basic features. They are also the most informative and salient perceptually. In fact, Croft and Cruse (2004) observe that it is relatively easy to form a clear visual image for the medial items, and that they also happen to be the most inclusive and linguistically neutral. Basic level concepts constitute or rather instantiate the prototypes (Lakoff 1987: 32; Taylor 1995; cf. Verbeemen et al. 2007).

Over the years, Rosch (1973, 1978), who pioneered research in this area, and others, e.g. Labov (1973), have compiled consistent evidence in support of prototype theory. Among other things, they succeeded in establishing that prototypical categories are mentioned first and most frequently in example listing tasks. They are also rated as best examples and give the shortest reaction times in true or false designs, e.g. a ROBIN is a BIRD (Geeraerts 2010). Finally, they come up first in priming tests in response to superordinate category primes, such as FRUIT or FISH. An issue that remains in the realms of speculation is the origin of prototypes. Here, Rosch points towards a number of pertinent factors, including general frequency of use (not to be confused with the frequency of occurrence in listing tests), the order of learning, depiction of average features and so on. Sound in many respects, Rosch's speculations did not receive unanimous empirical backing. In referring to this issue, Taylor (1995) hypothesizes that prototypes most likely owe their origin to the stability and adaptability of the cognitive domain. That is to say, categories are flexible enough to accommodate new exemplars, perhaps as peripheral members, without affecting the stability of the entire category instantiated by the prototype. An example showing this principle at work is the Belorussian herder, i.e. a person driving a herd of cattle along a public road. The Belorussian Highway Code classifies such individuals as drivers (Kiklewicz 2006).

The theory also has a few flaws. For instance, Goddard (1998) points out that the results of prototype research may be artifacts of data collection tools because people willingly produce taxonomies when asked to rank items with clear-cut boundaries. Moreover, Aitchinson (1997: 67) argues that people respond faster to common words and often confuse best examples with "favourite or valued specimen." Consequently, their judgments reflect personal preferences and cultural values and beliefs. There are also problems with reliability caused by the vagueness of some of the analysed notions. That is, attributes like similarity (to the prototype) are notoriously difficult to qualify objectively since, first and foremost, similarity is a graded concept, i.e. things may be more or less similar. Secondly, appraisals of similarity tend to be

highly subjective. Thirdly, the term itself is ambiguous and may refer to different aspects of the appraised items, i.e. perceptual similarity, functional similarity, and the like. According to Taylor (1995), this makes similarity judgments a function of at least three interacting factors: perceptual salience of an entity's attributes, (cultural) context of comparison, and related prototype categories. Similar criticisms have been leveled at the notion of goodness-of-exemplar (GOE), which is used in experimental designs assessing the so-called best examples of categories, i.e. prototypes. Croft and Cruse (2004: 80) comment that evaluations of the type *How good is X an example of category Y?* more often than not focus on the examples' typicality and tend to be constrained by an individual's familiarity with all or some of the usual members. Another factor is closeness to the ideal model as it may be a domain of expert knowledge. Finally, since prototypes are recursive and may therefore be best determined in terms of other prototypes, it may be impossible to avoid circularity and imprecision in prototype definitions. For this reason, the literature often resorts to more inclusive terminology and speaks of prototype effects.

A point worth noting is that, following the work of John Austin (1961), who postulated that word meanings were organized around (semantic) prototypes, it was common practice in many, if not most of the studies reported in the literature, to employ linguistic prompts to tap prototype representations. Moreover, research confirmed that the meanings of nouns and verbs such as *look, kill*, *speak* and *walk*, as well as speech acts, e.g. *telling a lie* (Aitchinson 1997; Taylor 1995) are also built around prototypes (Kövecses 2006). Morphology-wise, prototypical words tend to be less complex, meaning they are normally monomorphemic and more autonomous semantically. On purely psycholinguistic grounds, however, prototype theory seems to be yet another proposal derived from the belief that words reflect concepts. A notable exception to this trend was the work of Labov (1973), who used picture drawings and visualization techniques to tap into the extra-linguistic representations.

In bilingual and SLA contexts, research into prototype effects has addressed a variety of issues, one of them being inter-group differences in word choice between L2 learners from different L1 backgrounds (Jarvis 1998). The research shows that the lexical ranges that learners draw on when naming particular referents and the emergent lexical prototypes reflect L1-based categorizations. Jarvis defines the (referential) lexical range as all of the vocabulary items that are consistently used to relate to a specific referent. The lexical prototype, by contrast, is "the lexical item that is chosen most frequently by the members of a group when denoting a given referent" (Jarvis 1998: 69). Other studies in the area concentrated on prototype-induced lexical decisions by both native and non-native speakers (Aitchinson 1992) and included semantic judgment tests where subjects were expected to assign items to specific categories, e.g. *Is lettuce a vegetable?*, as well as categorization tasks involving identification of the best examples (Rosch 1977, 1978, cited in Goddard 1998) of categories such as furniture, birds, fruit, and vegetables. Also investigated

was the use of prepositions in spatial and temporal contexts (see Odlin 2005 for details). Overall, the accumulated data indicate that prototypical meanings are acquired faster and are more likely to be transferred to the L2, as shown by the now classic *breken* study by Kellerman (1978, 1983). What is more, the perception of L2 prototypes appears to be based on their L1 counterparts, which explains why translation equivalents tend to have the closest prototypical meanings (Jarvis 1998). Other factors to consider are the saliency and use of specific words, as well as their recency. Apparently, the most recently acquired items are readily available to L2 users and are therefore likely to serve as prototypes (Jarvis 1998). This, however, is also a function of the learner's L2 proficiency. The influence of the L1 can also be observed in the case of peripheral meanings, i.e. those that vaguely resemble the prototype (Pavlenko 2009). To sum up, central to this strand of SLA research is the assumption that L1-based prototypical concepts either determine or affect L2 learners' comprehension and use of L2 words. This is why it should come as no surprise that L2 learners whose experience and knowledge of the target language are limited often turn to their L1 concepts for help. Consequently, their L2 prototype judgments are probably a sum of their experience with both the L1 and L2.

1.2.3. Frames

A proposal for an alternative format of conceptual structure is that of a *frame.* Over the years, frames have gone by a variety of names, including script, schema, domain, scene, scenario, cognitive model, idealized cognitive model, cultural model, and the like (Fillmore 1975; Kövecses 2006; Taylor 1995). Interestingly enough, while most commentators point out the inconsistency and variability with which these terms have been used in the literature, there seems to be a consensus over the notion itself. Namely, frames are consistently defined as "specific unified frameworks of knowledge, or coherent schematizations of experience" (Fillmore 1985: 223). A more precise definition has been offered by Taylor (1995: 87), who sees frames as "global patterns of common sense knowledge about some central concept, such that the lexical item denoting the concept typically evokes the whole frame." Ungerer and Schmid (2006: 212), on their part, speak of "a type of cognitive model which represents the knowledge and beliefs pertaining to specific and frequently recurring situations." In line with these definitions, frames are believed to contain everyday folk and expert knowledge that makes it possible to understand certain words and their corresponding concepts. Some concepts can only be invoked through related frames. *Knuckle* is a case in point since, according to Langacker (1987), the only way to grasp its meaning is by evoking the finger-hand-arm-body frames, i.e. knowledge of the anatomy of the hand and arm. It goes without saying that a surgeon's view of the knuckle will be very different from that of a person without a medical background. Likewise, verbs like *spend* and *cost* can be understood against

the backdrop of the commercial event frame that encompasses general information about buyers, sellers, prices, money, bargains, and the like (Ungerer and Schmid 2006). Frames contain idealized knowledge that refers to the most typical, if not conventionalized, instantiations of a category in a variety of contexts and is shared by members of social and ethnic groups, as well as speech communities. Frames are also capable of imposing specific perspectives on the subject matter by highlighting relevant aspects and providing a sense of history, e.g. widow (Kövecses 2006). Finally, although much broader in scope, frames are closely linked to prototypes.

A frame that represents a template for specific activities and/or situations is called a script or cultural routine. It contains typical scenarios with details having to do with what happens when we engage in specific activities, such as shopping or eating out. Scripts make communication economical since they provide the so-called background knowledge; that is, information that enables interlocutors to negotiate meaning and infer what has not been stated explicitly or verbalized (Singleton 1999). This is equally relevant to spoken and written discourse.

From the standpoint of this debate, the frame-based approach does not make a categorical distinction between linguistic and non-linguistic knowledge. Consequently, analyses of lexical meanings draw on the same pool of information as those of conceptual categories.

1.2.4. Conceptual metaphor and image schemas

More extreme conflation of conceptual and linguistic representations has been proposed by Lakoff and Johnson's (1980) theory of conceptual metaphor. The theory posits that "the metaphor [is] not a figure of speech, but a mode of thought" (Lakoff 1993: 210). Accordingly, the patterns found in linguistic expressions are assumed to represent stable associations, i.e. mappings between conceptual domains. Moreover and true to the definition of the metaphor, mappings that belong to a more concrete source domain, such as JOURNEY, tend to structure a more abstract target domain, e.g. LOVE. To understand this point, one needs to turn to the domain of time and its common linguistic portrayal by means of space and/or spatial distance, as in *a long concert* and *a short lecture* (Casasanto and Boroditsky 2008).[2] The metaphor is asymmetrical, i.e. features of the source are transferred to the target but not the other way round. Interestingly, the same asymmetrical dependency has been found in non-linguistic tasks investigating the perception of time.

The practical implication of the conceptual metaphor theory is that despite being traditionally regarded as the province of poets, metaphor pervades ordinary

[2] This is an interesting metaphor based on mappings between two non-physical domains. What makes *space* an appropriate source domain for *time* is its perceptibility, which in turn makes it less abstract. For a discussion of the metaphorical nature of *space* see Szwedek (2009).

language and is as much a matter of thought as it is of language. The interaction between the two levels seems so pervasive that in talking about concepts, Lakoff and Johnson (1980) equate the linguistic metaphor with its conceptual underpinning. To give these arguments an empirical grounding, the authors provide numerous examples of colloquial expressions constructed along metaphorical patterns. A few of the spatial metaphors they identified are presented below:

a) HAPPY IS UP, SAD IS DOWN (*I'm feeling up/down*).

b) GOOD IS UP, BAD IS DOWN (*Things are looking up*; *Things are at an all-ti-me low*).

c) HEALTH AND LIFE ARE UP, SICKNESS AND DEATH ARE DOWN (*He came down with the flu*; *He is in top shape*).

d) VIRTUE IS UP, DEPRAVITY IS DOWN (*He has high standards*; *I wouldn't stoop to that*).

e) HIGH STATUS IS UP, LOW STATUS IS DOWN (*She'll rise to the top*; *He has a lofty position*) (Lakoff and Johnson 1980: 15–16).

Similar patterns have been found to underlie idiomatic expressions, proverbs and euphemisms which tend to be language-specific.

Some studies have refuted claims of the alleged pervasiveness of conceptual metaphor. For instance, on analysing the acquisition of figurative language in the L2, Cieślicka and Singleton (2004) came to the somewhat surprising conclusion that there is as yet no solid evidence showing the involvement of conceptual metaphors in the processing of figurative language. Still, they stress that an awareness of conceptual/linguistic patterns can greatly benefit L2 learning. There have also been accusations of a methodological bias. Namely, approaching the subject matter from a multi-modal perspective, Forceville (2009) blames the conceptual metaphor theory for excessive reliance on language and for overlooking elements that typically occur non-verbally and multi-modally. This criticism is echoed by Japanese mangas (Shinohara and Matsunaka 2009) where certain conceptual associations, such as ANGER IS A HOT FLUID IN A CONTAINER are shared by verbal and visual modalities. Forceville additionally points out that concrete source-concrete target mappings are not uncommon, especially in the realm of advertising.

Finally, there is evidence to suggest that metaphors may be subject to cultural rather than conceptual forces. The involvement of cultural factors has been implicated by Gevaert's (2001) corpus-based study of anger expressions in Old and Middle English, which, contrary to Lakoff's (1987) research, portrayed anger as a form of SWELLING rather than HEAT. In Forceville's (2009) opinion, Gevaert's findings show that culture is an agent in metaphor construal. Linguists are also aware that not all concepts are metaphorical (Saeed 2003) and that underneath metaphor lie canonical conceptual patterns. In respect of the latter, Johnson (1987) proposes that metaphors derive from a more basic level of cognitive structure, i.e. image schemas. Like metaphors, these are grounded in the physicality of human experience and therefore tend to be broadly defined as "a recurring, dynamic pattern

of our perceptual interactions and motor programmes that gives coherence to our experience" (Johnson 1987: xix). Kövecses (2006) stresses that schemas constitute culturally congruent frameworks for perceiving, categorizing and expressing (e.g. verbalizing) perceptual content in a symbolic format, and acquire meaning by virtue of being grounded in mental representations of everyday bodily experience. This combination of the mental and physical domains has given rise to notions of the embodied mind, at the heart of which is the idea that human experience and the ensuing conceptual representations are embodied, i.e. constrained by the nature of the human frame and its neurological organization.

For one thing, neither Johnson nor Kövecses confines experience to language-based representations. Instead, both of them accentuate the multi-modal nature of the conceptual domain, claiming that image schemas are sensory rather than propositional. Highly abstract and schematic (Kövecses 2006), they are not mental images, however (Evans 2009b). Some of the image schemas enumerated by Johnson include CONTAINER, MASS-COUNT, PART-WHOLE, BALANCE, PATH, CENTRE-PERIPHERY, LINK, and so on. Each of them has a structured format. For example, the CONTAINER schema has three components: interior, boundary and exterior. What this means in practice is that an entity is either inside the container or outside it. If an entity is placed in a container, which is then placed inside another container, the entity is inside both of them. To quote Saeed (2003: 354): "If I'm in bed, and my bed is in my room, then I'm in my room." There are a number of metaphors linked to this schema, e.g. STATES ARE CONTAINERS (*to be in panic*, *shock*, *love*), RELATIONSHIPS ARE CONTAINERS (*be in a relationship*), as are VISUAL FIELDS (*to come into view*). Abstract concepts also seem to be built around basic image schemas. For instance, CONTAINER is at the bottom of LOVE and CRISIS, providing them with structure and schematic meaning, and serving as a model blueprint for linguistic communication. Ontologically, the emergence of image schemas precedes the development of concepts and the onset of language. They are so basic to the human way of cognizing reality that most people are not conscious of them (Evans 2009b; Mandler 2004).

Overall, image schemas reveal the closeness of the semantic and conceptual levels by showing that semantic meanings are entrenched in conceptual patterns (Evans 2009b), as demonstrated by Kövecses (2006: 211), who enumerates the following schemas along with examples of related vocabulary.

a) CONTAINER: *inside-out*, *leave*, *enter*, *through*.
b) SOURCE-PATH-GOAL: *from*, *along*, *to*, *walk*, *run*, *swim*.
c) VERTICALITY: *up-down*, *high-low*, *above*, *under*, *over*.

It must be borne in mind, however, that even closely related languages encode potentially identical events and/or experiences differently. For instance, the English *The woman is walking in the rain* exhibits a containment relationship unlike its French equivalent *La femme marche sous la pluie* 'The woman walks under the rain', which exemplifies an under relationship (Evans 2011). This strengthens the case

for linguistic diversity since each language has a set of language-specific encoding patterns.

A question that remains unanswered is whether semantic conformity to image schemas can be taken to imply systemic isomorphy of the semantic and conceptual levels. In considering the options, it may be prudent to pay heed to Michel Paradis, who voices the opinion that language is only one of many "higher cognitive systems that represent the sum of a person's intellectual capabilities," with the conceptual system constituting another such system (Paradis 2004: 199). Accordingly, the idea of parallel mappings between two autonomous systems, or modules, does not seem inconceivable.

1.2.5. Grounded cognition

Implicit in all of the models discussed so far, including the less literal interpretations of the exemplar theory, is the conviction that conceptual representations, as seen through the lens of language, are qualitatively different from their modality-specific perceptual bases. In fact, they are assumed to be amodal representations linked to the perceptual input system but systemically independent of it. The grounded cognition model challenges this view and envisages conceptual knowledge as being distributed across relevant modality regions in the brain. Accordingly, concepts are reduced to patterns of neural activation developed for events, properties, objects and the like (Barsalou 2012).

In a sense, grounded cognition is an extension of the notion of embodiment to the field of neuroscience. One of its main tenets is that simulation, i.e. "the re-enactment of perceptual, motor and introspective states" acquired during interactions with the environment, body and mind (Barsalou 2008: 618; Barsalou 2009) is a central computation in cognition. The mechanics of simulations are as follows: during an experience, the various sensations or states, in Barsalou's terminology, are coded by the relevant modalities across the brain and integrated in the form of a multimodal representation stored in long-term memory. When required, e.g. during an act of recognition and/or categorization, this knowledge is reactivated and used for simulations of how this particular experience was originally represented by the brain. The re-enactment is never a complete copy of the initial modal state. In fact, it is partial and inaccurate (Barsalou 2009: 1281), and more often than not unconscious. In addition to simulations, the theory also speaks of simulators. These integrate the information encoded over repeated encounters with a category that is represented as a whole. The simulators have multi-modal content and are equivalent to concepts "in the more traditional theories" (Barsalou 2009: 1282). The content of a simulator never becomes active in its entirety. On the contrary, activation is selective because only those features that are relevant to the situation at hand are affected (cf. Paradis 2000), relative to factors such as frequency and recency of use, as

well as the context of situation. Barsalou (2009) claims that simulators may develop in long-term memory for any experience that is attended to, including internal states and introspection which give rise to abstract concepts. Moreover, concepts are not represented in isolation but in relevant situations, hence any simulation of a category in a specific context is labelled situated conceptualization.

Of crucial importance is whether language, being a symbolic system, taps into situated simulations during comprehension and production. Initial evidence points in this direction as simulations have been shown to play a key role in text comprehension by re-enacting relevant representations, be they of perceptual, motor, or affective nature (Barsalou 2009). Simply put, readers seem to simulate text content starting at the word level even in the absence of real-life referents. It will be interesting to see to what extent the language of input influences the quality and distribution of simulations in bilingual subjects.

Equally pertinent is the question of how much of the perceptually rich conceptual content is actually filtered into linguistic expression. Given its symbolic nature, language can only provide a skeletal rendition of the underlying conceptual substance. Evans and Green (2006: 7) claim that language is both "a limited and indeed limiting system for the expression of thought." Accordingly, it can only encode rudimentary prompts to the conceptual system for the purpose of accessing and/or creating a full scope of multimodal mental representations whose activation and interpretation is subject to contextual constraints. This, Evans (2009a) contends, makes meaning a function of context. To put it another way, meaning is a sum of a word's conventional semantic representation and of the related conceptual content that has been activated in a specific context. An additional constraint is imposed by usage which, in line with the Gricean maxims of quantity and manner, requires that communication be devoid of unnecessary detail. Thus, although words carry semantic information that is recognized by members of specific language communities both in and out of context, they are only symbolic representations of concepts (cf. Bierwisch and Schreuder 1992). The section below examines lexical (lexicalized) concepts, i.e. lexical labels (words) that are used to flag specific concepts and their consequences for models of mental representation (Levelt et al. 1999).

1.3. Lexical(ized) concepts

By name alone, lexical concepts seem to combine the best of both worlds and thus contain both semantic and conceptual information. This is how they were originally perceived by Levelt (1989) and a host of other linguists from various theoretical camps, some of whom have been mentioned in this chapter. However, from the perspective of two-level (separatist) semantic models (Bierwisch and Schreuder 1992), lexical concepts are essentially components of linguistic knowledge. That is, concepts that are associated with the lexical subsystem provide information to

do with events, people, objects, entities, and the like, while those that are linked to grammar have schematic content and impose structure through tense, number and aspect, all of which are instantiated in the morphosyntax of a language (Evans and Green 2006; cf. Talmy's (2003) open-class and closed-class elements and Pavlenko's (1999) grammaticalized concepts). The cognitive linguist Evans (2009a) sees lexical concepts as interacting with the conceptual level to form semantic representations and considers their content to be underspecified, conventional and specialized for encoding linguistic information. To demonstrate the full extent of the interaction between lexical concepts and the conceptual domain, Evans (2009a: 9) discusses the semantic range of *open*, drawing attention to the fact that the exact meaning of each instance of the word is specified by background knowledge derived from context and experience rather than from the word itself (see Example 1). It must be stressed, though, that the word indicates the activity type, albeit in a schematic manner.

(1)
a. *John opened the window.*
b. *John opened the curtains.*
c. *John opened his mouth.*
d. *The surgeon opened the wound.*

Commenting on the interaction of words and contexts, Kesckes (2007) points out that, apart from semantic information, words encode the history of their use in context and thus are not context-free. Rather, they create their own mental context each time they are used. Entrenched in the situational frame, the actual meaning is the result of the interaction between the mental representation for the word itself, the situation at hand, word semantics, and contextual factors. A similar view of lexicalized concepts is endorsed by the neurolinguist Paradis (2004), who admits that despite its non-linguistic nature, the conceptual store may contain concepts organized around semantic boundaries of lexical items, i.e. language-based lexicalized concepts, which are derived from culture-bound experience, but which nevertheless remain non-linguistic. This often leads to one-to-one correspondences, first, between concepts and meanings, and second, between L1 and L2 meanings and related concepts. In Paradis's opinion, meanings are part of the lexical representation, along with their phonological and written forms. He explicitly stresses that one-to-one correspondences should not be construed as being indicative of the existence of a joint semantic-conceptual store because there are also concepts that are completely independent of language. In the bilingual mental lexicon, L1 and L2 translation equivalents may activate the same or different concepts. In fact, some recognized translation equivalents may lack conceptual equivalence (Pavlenko 2009), while others will only be verbalized adequately in one language. As a result, bilinguals may be forced to resort to borrowing in order to patch up lexical gaps, i.e. name a concept that has not been lexicalized in the language spoken. It follows that the

lack of a lexical label is not indicative of the absence of an equivalent concept in the bilingual's mind, as the concept may be easily expressed in the bilingual's other language.

To illustrate the extent of semantic/conceptual similarities and differences within the bilingual lexicon, Pavlenko (2009) proposes a revised version of the Hierarchical Model by Kroll and Tokowicz (2001), which she calls the Modified Hierarchical Model (MHM). In contrast to earlier versions, the model does not assume that the semantic/conceptual store is homogeneous. As a result, the representations it contains may be partially or fully shared by the two languages, or remain language- and culture-specific; that is, unique to a specific L1 or L2. The emphasis on the existence of meanings/concepts that are not lexicalized in one of the bilingual's languages is, according to de Groot (2013: 180), "a unique feature of the model." The MHM is presented in Figure 2.

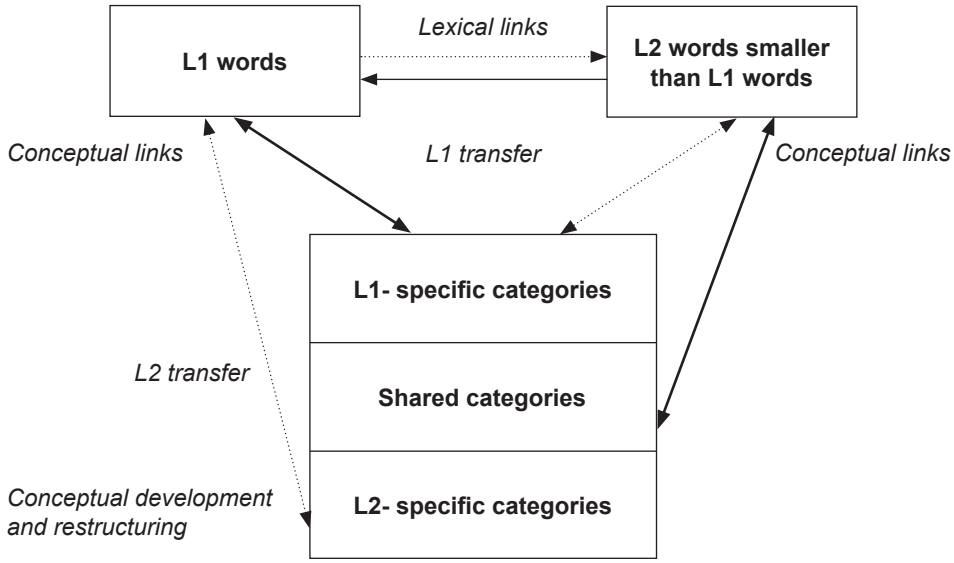

Figure 2. The Modified Hierarchical Model (adapted from Pavlenko 2009)

Another obvious strength of the MHM is that it explains variability within the bilingual lexicon. More precisely, bilinguals have been found to use categories that diverge from monolingual norms due to transfer and restructuring processes operating within the system (Cook 2003). These are accounted for by *shared categories* containing concepts common to both languages. As for the language-specific categories, the fact that they are stored separately has concrete consequences for production because the activation of a non-existent category in one of the bilingual's languages may result in code-switching, borrowing or calquing. It may also lead to pauses and fluency breakdowns (Pavlenko 2009) as the bilingual tries to name a non-existent concept.

The nature of shared and language-specific categories warrants further clarification. Both category types encompass a variety of conceptual constellations ranging from complete and partial equivalence to complete non-equivalence between L1- and L2-mediated concepts (Pavlenko 2009). Conceptual (near) equivalence denotes identical category structure and boundaries, as is the case with the English adjective *upset* and its Russian counterpart *rastroennaia*. Such equivalence poses no difficulty for the L2 learner who most likely relies on positive transfer when acquiring such overlapping concepts. Partial equivalence in turn signifies a form of inclusion by which two or more categories of the L1 are subsumed under a larger category in the L2 and the other way round, i.e. when an L1 category is divided into two or more categories in the L2. Pavlenko (2009) calls such relationships *nesting.* A case in point is the English word *die,* whose range covers the following Polish words: *umierać* 'die with reference to a human', *zdychać* 'die with reference to an animal and a human derogatorily', and *uschnąć*, *zwiędnąć* 'die with reference to a plant'. From the perspective of an L2 learner, nesting is a potential source of learning difficulty as it requires that learners restructure category boundaries and overcome the influence of categorization patterns in their native language. Finally, conceptual non-equivalence gives rise to language-specific concepts and denotes lack of a counterpart in the other language. Pavlenko (2009) explains that the acquisition of a new concept requires direct exposure to language in its natural context of use over a period of at least three years and should not be confused with the ability to define words, as these may lack conceptual representations in the bilingual's L2. Learners will additionally have to establish the exact range of contexts that the category applies to and resist the tendency to borrow established concepts from the L1.

An additional factor to consider is the bidirectionality of cross-linguistic interaction and the resultant complexity of conceptual constellations and related verbal behaviour. Two cases of reverse L2-L1 transfer seem of special interest here since they complete the range of options presented above for SLA contexts: L2-induced concept restructuring and attrition. In the words of Jarvis and Pavlenko (2008: 160ff), "restructuring involves a partial modification of already existing language-mediated conceptual categories and induces a change in the prototypes, category members, or scripts involved." The example used in evidence is the Spanish word *edificio* 'building', whose use by Spanish-speaking immigrants to New York City became restricted to Latin American two- and three-storey buildings. This is because they borrowed its English equivalent *los bildin* or *los bildenes* 'building'/'buildings' to refer to the structures forming the New York skyline, which did not resemble any of the *edificios* they had seen in their home country (Otheguy and Garcia 1993, cited in Jarvis and Pavlenko 2008). As for conceptual attrition, even though it is difficult to document, one of its signs may be lack of active use of relevant lexemes in communication. This may be coupled with compensatory measures, including inaccurate labelling stemming from word loss, code-switching, borrowing, semantic

shift, framing transfer and a narrowing of lexical ranges (Jarvis and Pavlenko 2008). Given that linguistic processes do not always affect the non-verbal domain, caution is needed when attempting to interpret linguistic data since the inability and/or unwillingness to retrieve a vocabulary item may result from temporary inhibition of the language, rather than loss of a conceptual category. A telling sign of the latter would be impoverished or non-existent mental imagery, as well as the inability to retrieve related information from memory.

An important caveat to the model is that it is only concerned with lexical concepts which the author defines as "mental representations linked to word forms" (Pavlenko 2009: 125), or alternatively, "as multimodal representations that allow speakers to map […] words onto real world referents" (Pavlenko 2009: 141). Taken at face value, these definitions are indicative of a broad approach that encompasses both linguistic and non-linguistic knowledge, as words are assumed to tap into both repositories. However, lexical concepts are believed to have boundaries delimited by the semantic attributes of the words they correspond to, as used in a particular context. This leaves no room for concepts that are not lexicalized but may potentially be verbalized in a given language, or new concepts created ad hoc to meet specific goals (Barsalou 1983). Unfortunately, the model does not envisage such a possibility. Yet another reservation is that the relationship between words and real world referents or mental representations alluded to in Pavlenko's definition of lexicalized concepts has traditionally been regarded as the domain of semantics (Saeed 2003). Consequently, in the MHM, the term *conceptual* refers to a plethora of relationships that linguists tend to see as semantic and sometimes even pragmatic (Odlin 2003: 464). In this sense, the term seems to be a new name for an old *concept*, while the MHM only makes sense if the semantic/conceptual store retains its joint semantic/conceptual nature. Otherwise, it may be taken to diagrammatically represent a version of linguistic determinism. What is lacking is an account of how non-linguistic knowledge fits into the model.

The rationale behind this part of the monograph has been to present current thinking on the nature and status of (lexicalized) concepts within the mental lexicon. It is noteworthy that the past two decades have witnessed a shift in the perception of concepts: from conceptual universalism and stability to individuality and dynamism. Accordingly, concepts are being increasingly conceived of as variable mental models of the world, which are created in real time and context, and which constitute an amalgam of personal experience, cultural conditioning, education, observation and imagination, all stored in memory. As regards language, most of the frameworks discussed here are extensions of unitary (one-level) semantic models and therefore postulate the closeness of language to conceptual representations. With the extent of this relation still in need of research, clarification and theoretical validation, it is a challenging task to establish the exact mechanisms for how conceptual knowledge interacts with linguistic parameters and situational

factors in the process of creating and conveying meaning. According to Bierwisch and Schreuder (1992: 30), part of the problem is that "assumptions about non-linguistic aspects of meaning depend to a large extent on the linguistic utterance used to express the conceptual structures in question." What the current discussion has made clear is that confining the debate to the realm of theoretical and solely linguistic analysis may substantially reduce the likelihood of establishing the true status of words in the mind. An attempt to explicate meaning in linguistic terms alone is the focus of the next section.

1.4. Analysing lexicalized concepts: Natural Semantic Metalanguage

Evolving alongside cognitive semantics was Anna Wierzbicka's approach to the analysis of conceptual structure via its primitive elements, customarily referred to as primes or primitives. At the heart of this approach was the conviction that thought and language are isomorphic, and additionally, that language use is essentially a form of thought (Goddard 2003a). Consequently, language appears to be the only available means of accessing thought and may therefore act as a guide to the conceptual domain. The thinking behind Wierzbicka's position is as follows: a limited number of human concepts constitute the prelinguistic conceptual core which, on account of being innate, is independent of language and yet manifests itself via linguistic elements. These are universally lexicalized and hence form a universal metalanguage operating as a platform for unifying human experience and converting it into a set of generally understandable and self-explanatory units of meaning. Goddard and Wierzbicka (2002) have named this mini-language the Natural Semantic Metalanguage (NSM). It is composed of basic (building) blocks of meaning that have conceptual status, and thus constitute semantic/conceptual primes or primitives. From a theoretical point of view, a semantic prime is a linguistic item whose meaning cannot be defined in any simpler terms. Because of that, it can be used in explications of other more complex expressions. On a practical level, a prime should be intuitively comprehensible to native speakers, including children, and verifiable empirically. It should also be translatable into all languages of the world. This is why the most reliable method of identifying primitives is by falsifying them, i.e. trying to find languages and/or contexts where a hypothesized prime cannot be used (Durst 2003).

Being indefinable, semantic primes can, in combination with other primes, be used to represent all complex meanings and related concepts. This aligns the NSM framework with decompositional approaches advanced, among others, by Jackedoff (1990). The strategy adopted for the process of concept explication involves reductive paraphrase, i.e. the decomposition of meanings into smaller and more basic semantic items, i.e. primes. Failure at decomposition indicates that the item under analysis is a prime itself because it is indefinable and indecomposable.

Table 1. Proposed semantic primes (2007; www.une.edu.au/bcss/linguistics/nsm/semantics-in-brief.php; Wierzbicka 2007)

	English	Polish
Substantives	I, you, someone, people, something/thing, body,	ja, ty, ktoś, coś/rzecz, ludzie, ciało
Relational substantives	kind, part	rodzaj (czegoś), część
Determiners	this, the same, other/else	ten, ten sam, inny
Quantifiers	one, two, some, all, much/many	jeden, dwa, trochę, wszystko, dużo
Evaluators	good, bad	dobry, zły
Descriptors	big, small	duży, mały
Mental predicates	think, know, want, feel, see, hear	myśleć, wiedzieć, chcieć, czuć, widzieć, słyszeć
Speech	say, words, true	mówić, słowo, prawdziwy
Actions, events, movement, contact	do, happen, move, touch*	robić, dziać się, ruszać (się)
Location, existence, possession, specification	be (somewhere), there is, have, be (someone/something)	być (gdzieś), jest, mieć, być (kimś/czymś)
Life and death	live, die	żyć, umrzeć
Time	when/time, now, before, after, a long time, a short time, for some time, moment	kiedy/czas, teraz, po, przed, długo, krótko, jakiś czas, chwila
Space	where/place, here, above, below, far, near, side, inside	gdzie/miejsce, tutaj, pod, nad, daleko, blisko, strona, wewnątrz
Logical concepts	not, maybe, can, because, if	nie, (być) może, móc, ponieważ, jeżeli
Intensifier, augmentor	very, more	bardzo, więcej
Similarity	like	taki jak

* In Wierzbicka (2007), the Polish equivalent of TOUCH is not included in the list of primitives.

Since the 1970s, Wierzbicka and her associates have identified about 65 semantic primes, using the trial and error technique in attempting to reduce meanings to their most basic components (Wierzbicka 2008). Table 1 presents the 2007 listing of the Polish and English exponents of primitives (Wierzbicka 2007). By way of a commentary, Goddard (2002) observes that many of the exponents are polysemous and that semantic primes only represent one of their senses, i.e. that which is delimited by relevant canonical contexts. For instance, the following sentences constitute the canonical contexts for the primitive DO, whose meaning remains unaltered in translations into all human languages (Durst 2003: 165):

(2) *I did something*
you did something good to someone
someone did this
this person did the same
another person did this at the same time
etc.

Moreover, since the theory assumes that a primitive should have a translation equivalent in every human language, it may be either a lexeme, phraseme, e.g. *a long time,* or a bound morpheme. The necessary condition is that it conveys the required primitive meaning. Also, the same exponent may be represented in a language by several forms, as is the case with *I* and *me*. Such alternative forms are named allolexes in the NSM approach. Contrary to the generally accepted view that the components of semantic language should convey only one primary meaning (Apresjan 1995), Goddard (2002) shows that in a natural language a single word form may express two distinct indefinable primitive meanings. An example of this phenomenon, which Goddard branded non-compositional polysemy, is the Samoan word *peke* expressing both DO and SAY.

Finally, the exponents of primes may have different morpho-syntactic features because they may be represented by a range of parts of speech in different languages. The way they are combined to form meaningful phrases and sentences is determined by intuitively verifiable rules of syntax. The rules are innate and universal, and as such constrain the combinations of primitives across the linguistic spectrum. In the words of Wierzbicka (1997: 28), "the universal syntax of meaning […] consists in universal combinations of universal conceptual primitives." As an example, Goddard (2003a: 407) cites the following combinations of determiners, quantifiers, substantives, and temporal and spatial elements that have been found to have semantic equivalents in all languages.

(3)
a) *this thing/person*, *the same thing/person*, *one thing/person*, *two things/people*
b) *at this time*, *in this place*, *at the same time*, *in the same place*

Despite the fact that the formal realization of these combinations differs from language to language, they have semantic equivalents in all languages. Thus, together with semantic primes, these combinatorial principles form the core of what Wierzbicka calls a *language of thought* or *lingua mentalis*, both being alternative labels for the Natural Semantic Metalanguage discussed here.

1.4.1. Semantic explications

The basic tenet of the NMS approach is that meaning representation should take the form of a paraphrase composed of and interpreted through natural language, i.e. semantic primitives. The structure of the paraphrase, also labelled as semantic explication, should reflect its conceptual complexity. This is how it works in practice: every semantic item, e.g. *liberty*, is hypothesized to represent a thought that people presumably have when they use the word concerned. The word's meaning can be explicated by means of a sentence or phrase, with punctuation marks kept to an absolute minimum and used only when they are vital to disambiguating the explication. Within it, each and every line is separated by a break to indicate closure. This is because the components of explications are conceptual entities representing the concept's denotational and connotational aspects. As regards the former, Wierzbicka (1985: 60) argues that semantic explications should contain the item's essential features, i.e. "the smallest set of features which, taken together, ensure that any object which has them will be generally recognized as a member of the category in question." As for the latter, the inclusion of connotational aspects clarifies the range of the word's usage. Finally, the application of self-explanatory natural language enables the explications to capture the naïve picture of meaning that is best reflected in native-speaker intuitions rather than expert knowledge (Durst 2003).

Of particular relevance to conceptual transfer is that NSM explications constitute prototypical scripts formed as a result of repeated experiences (Wierzbicka 2008). In Wierzbicka's opinion, the scripts are essentially prototypical cognitive scenarios showing the thinking behind specific words. This in practical terms means that explications specify the features of their referents together with what people think about them (Geeraerts 2010). The exact way in which such thoughts are filtered into language can best be illustrated on the basis of the explication for the English word *anger* (Wierzbicka 2008: 194):

(4) *She was very angry at the time =*
she felt something at the time
like people can feel when they feel something bad
because they think like this about something:
"this someone did something bad
I don't want things like this to happen
I want to do something because of this"
she felt like this because she thought like this

What this scenario makes clear is that anger, being an emotional response, is closely linked to a cognitive appraisal, i.e. someone's thoughts about someone else's wrongdoing. As pointed out by Harkins and Wierzbicka (1997), this does not

imply that emotions are defined via language. Rather, they are seen as emotional responses to specific thoughts represented linguistically. Given the referential indeterminacy of emotion words and/or concepts, the above explication could be assumed to be a conceptual template for both the emotion word and the emotion itself. Furthermore, since abstract concepts are quite easily explicated by means of semantic primitives and are partly acquired through linguistic interaction (Kousta et al. 2008), their explications stand a good chance of being accurate in reflecting the underlying concepts (Goddard 2003b). This in turn makes them a promising avenue for research into the language-concept relationship. Concrete concepts, i.e. those developed for artifacts, animals, plants, the environment and human activities, are more of a challenge because, as discovered by the NSM approach, they show greater semantic complexity and require non-primitive concepts for explication. This is explained in more detail in Section 1.4.2.

Finally, commentators on NSM often observe that despite using what the theory promises to be self-explanatory natural language, the explications are not universally intelligible. Quite the opposite, without prior knowledge of the referent it is sometimes impossible to guess what it might be. A solution recommended by Geeraerts (2010) is to test the explications against the judgments of a panel of users, which he claims has not been done systematically.

1.4.2. Semantic molecules

Although in the NSM approach every care is taken to explain the definiendum in simple and indecomposable terms as a way to avoid circularity of description, it is at times practical for space-saving reasons alone to use non-primitive elements. This tends to be done on condition that they are simpler than the definiendum itself and do not need to be defined via the definiendum (Goddard 2003b). The NSM calls such non-primitive shortcuts *semantic molecules*. If need be, they can be further decomposed into primitives. On the whole, however, they come in handy in analyses of concrete vocabulary referring to artifacts, natural and cultural phenomena (Wierzbicka 2009). A case in point is the molecule *hands* used to explain quite a few other concepts, e.g. *fist*, *finger*, *to clap*, *to catch*, *cup*, *mug*, *spoon* and so on.

Some molecules have equivalents across a spectrum of languages. A majority of them turn out to be language-specific, however. Wierzbicka (2009) enumerates a number of semantically complex domains that require the use of molecules in Polish, the most common of them being body parts (hands, legs), aspects of the natural environment (water, ground), kinds of people, plants and animals, as well as food and its consumption. To understand the need for such shortcuts, it may be of interest to note that the NSM explications for *cup* and *mug* (Wierzbicka 1985: 33–36) take about two pages each.

1.4.3. Neo-Whorfianism, Wierzbicka style

A point underscored by the proponents of Wierzbicka's approach is that it inventively combines neo-Whorfianism and linguistic universalism. Consistent with this premise, one of Wierzbicka's theses posits that "the hypothesis of linguistic relativity makes sense only if it is combined with a well thought out hypothesis of linguistic universality" (Wierzbicka 1997: 22), and that without linguistic universals it would be impossible to access conceptual universals and to compare the conceptual systems entrenched in the highly diverse semantic structure of human languages (Wierzbicka 1997). What needs to be stressed, too, is that despite such an apparent universalist flavour, the theory takes account of language-specific characteristics by showing how the irreducible semantic core, which numbered about 65 primes in 2007, manifests itself through the semantic and syntactic (combinatorial) features of specific languages. It is these features that "constitute the essential individuality or 'personality' of each language – the minimal set of properties which makes the language different from all others, and as such […] deserve to be studied in their own right" (Goddard 2002: 32). Also, considering that the average size of the lexicon in any language exceeds the number of proposed primes, it becomes evident that the lexicon must by necessity be language-specific rather than universal (Goddard 2003b). One obvious implication of this argument is that it is impossible to study the universal conceptual core by overlooking its surface realizations. In other words, analyses of conceptual meaning cannot escape from language (Goddard 2003b). This is exactly where linguistic relativity and universality converge.

Yet, in his appraisal of NSM theory, Geeraerts (2010) observes that it is unclear how, if at all, semantic primitives bridge the gap between language and cognition. He also questions the universality of primitives by observing that "there is no well-defined method for assessing the universality of concepts" (Geeraerts 2010: 132). In fact, a serious blow to the universalist claims has been dealt by the discovery that some languages lack semantic exponents of some of the primes. For example, Yukatek Maya does not lexicalize *before* and *after* (Bohnemeyer 2003). Moreover, in some languages the primes lack sociolinguistic and formal uniformity (Riemer 2010), thus disproving assumptions of complete equivalence across the entire linguistic spectrum. There also seem to be problems with canonical contexts since they do not always ensure that the targeted meaning is identified.

These criticisms aside, what the NSM approach has to offer to bilingualism research is, in the words of Wierzbicka (2008: 194), a *tertium comparationis* – a common measure for appraising and comparing lexicalized concepts. Considering the wealth of detail provided by NSM-oriented contrastive studies (Wierzbicka 1992, 1999), the framework emerges as a valuable tool of analysis for linguists interested in the language-concept interface and bilingualism.

1.5. Language-mediated processes in the bilingual lexicon

The Hierarchical Model of bilingual memory (Kroll and Tokowicz 2001) assumes that all interactions within it are by default linguistic. In contrast, the separatist two-level view of semantic/conceptual representations calls for the demarcation of a boundary between the linguistic and non-linguistic, making the existence of processes spanning the two levels tenable. The present section offers an overview of such processes, starting with purely lexical phenomena as they may prove useful in bringing out the contrast between linguistic and non-linguistic (conceptual) operations. Implicit in the discussion is the view that language constitutes an independent modality with the capacity to influence cognitive functions. The diverse outcomes of this influence and related theoretical positions are discussed at length in the subsequent chapters under the titles Linguistic Relativity, Thinking for Speaking and Conceptualization via Event Construal. Under the current approach, all three frameworks deal with facets of cross-language conceptual influence.

A point in need of explanation is that the lexical processes discussed here are assumed to stem from cross-linguistic influence, formerly referred to as *transfer*. Following Kellerman and Sharwood-Smith (1986), this work does not reject transfer's spatial dimension of a relocation of entities from one language to another, as demonstrated by borrowing and calquing. On the contrary, it broadens its range by going beyond the literal sense of transfer and taking on board processes such as semantic extension and convergence, as well as a host of phenomena that emerge from bidirectional interaction of two linguistic systems at different stages of development, activation and use. Herdina and Jessner (2002) capture the dynamism of such interaction in their Dynamic Model of Multilingualism. It envisages bilingual memory as a dynamic system of mutually dependent variables that may either enhance or inhibit the growth of other co-variables, giving rise to nonlinearity and unpredictability of the emergent structures.[3] The authors also stress the intermodular nature of cross-linguistic influence, implicating the involvement of general cognition in the process.

1.5.1. Lexical and semantic transfer

Traditionally, cross-linguistic interaction within the bilingual lexicon has been perceived as involving borrowing, interference and/or transfer (Haugen 1972; Weinreich 1953). Commenting on their *modus operandi*, Romaine (1995: 55) explains that any analysis of language contact phenomena must take into account the fact that "in order to be used, words must interact with phonology, syntax,

[3] For an alternative view of L2 development, see research into UG-constrained language acquisition (White 1989).

morphology and semantics." This accounts for the variety of forms taken by cross-linguistic lexical interaction, as well as pointing towards the need to use a more integrated approach to analysing lexical phenomena. Haugen (1972) achieved this by focusing on items that were phonological, morphological and semantic adaptations to the language spoken, and those that made their presence felt exclusively in the domain of semantics. Concerning the former, there is always the possibility of switching over to the other language and using unassimilated vocabulary items. The term used in the literature to refer to such practice is code-switching. Its use can be either intentional or unconscious. Words may also be adapted phonetically and morpho-syntactically to the language spoken, often in an ad hoc manner. Haugen (1969) refers to such items as loanwords (Haugen 1969). A pertinent example is the polonized term *native-speakerzy* for native-speakers. A subcategory of loanwords is loanblends, in which only one part is borrowed, as is the case with *gumbaum* in Australian German. The item is made up of the English word *gum* and the German word *baum* 'tree' (Grosjean 1982). Romaine (1995) points out that borrowing is common in immigrant communities and is motivated by the need to name artifacts and phenomena specific to the new environment and/or culture. In an SLA context, in addition to code-switching and loanblends, learners tend to rely on false cognates whose formal similarity to an L2 lexeme encourages judgments of both structural and semantic equivalence (Jarvis 2009). These are reflected in an incorrect application of words in the L2, as shown in Example 5:

(5) *Jest sympatyczna* 'She is nice and friendly'/**She is sympathetic*.

From a psycholinguistic perspective, this kind of transfer may be the result of processing interference taking place when words from two or more languages are activated and compete for use in the language spoken. De Bot (2004) explains that an active word in one language may activate a formally similar word in the other language. In the case of processing interference, lexeme competition may also result in the creation of blends which are online constructs, and as such consist of (parts of) the L1 and L2 lexemes that were activated simultaneously. Because this type of cross-linguistic influence involves phonological and graphemic structure, Jarvis (2009) calls it lexemic transfer by analogy with a distinction advanced by Levelt (1989), who spoke of two planes of lexical representation: one conveying phonological and graphemic information, i.e. the lexeme, and the other containing semantic and syntactic properties of specific words, i.e. the lemma. On closer inspection and in line with Haugen's typology, lexemic transfer involves, to some extent at least, lemmatic transfer because it engages the semantic level in addition to exploiting purely formal elements.

The second strand of cross-linguistic lexical influence, as discussed by Haugen (1969), the loanshift, can be observed mainly in the semantic domain. It consists in extending the meaning of a word in one language so that it embraces the meaning

of a similar-sounding word in the other language. For instance, in the sentence **Muszę wieczorem studiować historię (uczyć się historii)* 'I have to study history tonight', the Polish word *studiować*, which denotes attending an organized course of study at university level, has been extended to a situation involving private study and revision (Latkowska 2002). This type of extension is termed *semantic extension*. The second category of loanshifts, the calque, consists in rearranging words in the base language so that they correspond to a pattern in the bilingual's other language. To put it another way, a calque is a literal translation into the language being used, as exemplified by the expression **Mam słodki ząb* 'I have a sweet tooth' (Latkowska 2002; cf. Arabski 2007). The example shows that, in the case of calques, the influence of the other language is solely semantic and not phonetic. From a practical standpoint, bilinguals resort to the use of calques and extensions when it seems to be the only way to convey an idea or distinction that is better expressed in their other language. They may also do so for linguistic purity reasons since semantic borrowing does not intrude into language in a directly observable manner. Situational aspects aside, Jarvis (2009) classifies loanshift-like cases of cross-linguistic influence as manifestations of lemmatic transfer because they engage primarily the semantic representations of the words involved. This is most evident in polysemy which is notoriously diverse across languages. When a polysemic pattern is carried over to the L2, L2 learners assign L1 lemmas to L2 lexemes. Consequently, the L1 and L2 lexemes become variants of the same lemma. The following sentence produced by a Finn illustrates this point: **He bit himself in the language*, rather than *tongue* (Ringbom 1987). In Finnish, *kieli* means both language and tongue. Incidentally, an identical mistake could be made by a Pole learning L2 English since the Polish *język* covers both *tongue* and *language*. Calques exemplify lemmatic influence across languages as well and, unlike transfer at the lexemic level, occur frequently in unrelated languages.

An additional component of lemmas is information about collocational and syntactic constraints on particular words. It may seep into another language in the form of collocational and subcategorization transfer. Both relate to the way lemmas are linked to other lemmas, and both are unaffected by language distance (Jarvis 2009). Collocational transfer concerns words that conventionally co-occur, and thus affects not only typical word pairings but also calques and phrasal verbs, as the latter can be seen as lexical collocations (Jarvis 2009). Research shows that typical collocations tend to be carried over to the weaker language, i.e. the L2, but not exclusively so. Cases of L2-induced collocations have also been found in the L1 of proficient bilinguals. For example, the speech of Polish-English speakers is replete with expressions such as **wziąć zdjęcie* 'zrobić zdjęcie/take a picture', **wziąć pociąg* 'złapać pociąg/take a train', and **robić sens* 'mieć sens/make sense' (Latkowska 2002). Subcategorization transfer appears to follow a similar pattern in the sense that it concerns words that typically co-occur within the phrase. Consequently, what is copied into the other language is either the complement, as in *I'm going* ***to the house***

for *I'm going home*, or a specific word within the complement, i.e. **I'm going **to** home.* Jarvis (2009) comments that subcategorization transfer is essentially a syntactic phenomenon. Still, its inclusion at the lemma level emphasizes the interdependence of syntax and semantics, a point repeatedly made by Chomsky and other proponents of Universal Grammar (Cook and Newson 1996) and of cognitive semantics (Riemer 2010).

A less conspicuous facet of cross-linguistic lexical interaction is the phenomenon of convergence. It consists in the simplification of the L1/L2 lexicons due to some of their boundary exemplars being subsumed under categories closer to the centre in either both languages or just one of them. Since as a result the lexicons contain fewer language-specific items, they lose part of their diversity as compared to those of monolinguals and show signs of shifting towards a common naming pattern (Ameel et al. 2009). Because research (Ameel et al. 2005) shows a dissociation of lexical and conceptual categorization patterns, lexical processes remain confined to the linguistic level.

1.5.2. Conceptual transfer

The unprecedented development of research technology over the past twenty years or so has sparked an upsurge of interest in the cognitive operations within the human mind, monolingual and otherwise. Consequently, psycholinguistic explorations have become more focused, giving rise to finer distinctions and a more precise stratification of the levels of representation and related processes. This section brings into the foreground one of the more recent notions, i.e. that of *conceptual transfer*, which is assumed to function at the language-cognition interface. Two positions on its nature have emerged within the framework of SLA and psycholinguistics: the Theory of Linguistic Relativity and the Conceptual Transfer Hypothesis. Both share the assumption that linguistic representations are not "isolated from other cognitive systems" and that language(s) and cognition "can influence each other" (Bialystok 2005: 419), as is discussed in Sections 1.5.2.1 and 1.5.2.2.

1.5.2.1. Linguistic relativity

Broadly speaking, the term denotes the influence of language on thought (Jarvis 2007; Levinson 2003b; Lucy 2004; Lucy and Gaskins 2003). Accordingly, research in this field aims to isolate language from non-linguistic thought. This is why every care is exercised to construct designs that exclude verbalization even at the level of inner speech (Green 2000).

The idea that the first language may have an impact on thought and that through thought it may influence the L2 has been advanced by Odlin (2005, 2010),

who defines conceptual transfer as a case of linguistic relativity. In his opinion, it can be observed in L2 production and comprehension in the form of L1-induced conceptual influence on word and structure choice (see Figure 3). To distinguish between conceptual effects and purely linguistic phenomena, he introduces the term *meaning transfer* covering semantic and pragmatic influences. Conceptual transfer is a subset of meaning transfer since all conceptual transfer involves meaning transfer but not the other way round (Odlin 2005: 6). To prove this point, Odlin quotes an example from Polish, which occasionally uses plural verb forms to refer to a singular referent, as in *Wczoraj **byliśmy** z bratem w teatrze* '*we were at the theatre with my brother yesterday'/'my brother and I were at the theatre yesterday'. If translated literally from Polish into English, the sentence denotes the involvement of at least three individuals. The Polish equivalent implicates just two people. Since Poles can clearly recognize the singular referent of the plural *byliśmy*, i.e. there is no impact on cognition, the sentence instantiates meaning transfer alone rather than conceptual and meaning transfer in toto.

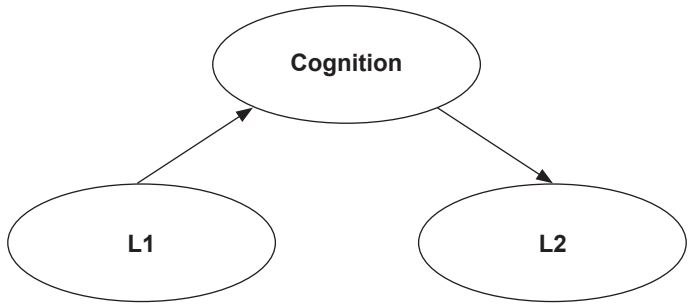

Figure 3. The scope of linguistic relativity according to Odlin (2005)

Although Odlin's concern is primarily linguistic, his view of conceptual transfer as linguistic relativity is not shared by Jarvis and Pavlenko (2008), who nevertheless seem to be well aware of the mutual dependencies between these two phenomena. This dependency is best described in the words of Odlin (2010: 193) himself: "work on relativity and work on conceptual transfer are interdependent, and the symbiosis of the two fields will probably increase in the coming years."

In methodological terms, the accepted testing ground for linguistic relativity is whether linguistic properties are mirrored by non-linguistic behaviour, as assessed by non-verbal designs. In essence, as Malt et al. (1999) explain, objects A and B belong to the same linguistic category if they are called by the same name on a particular occasion. Likewise, they are members of the same conceptual category if they are represented within the same cluster of objects on the basis of similarity at a specific point in time. An influence of language on non-linguistic conceptual representations is believed to obtain when non-verbal categorization is carried out along linguistic naming patterns. Without observable non-linguistic effects,

any form of relativistic influence on either L1 or L2 remains speculative. For more information on this and related issues see Chapter 2.

1.5.2.2. The Conceptual Transfer Hypothesis

Like linguistic relativity proper, this line of research also investigates the interface between language and cognition. In this case, however, the focus is not so much on non-linguistic cognition as on the language of users of two or more languages, in common with the view that language-mediated lexicalized and grammaticalized concepts acquired through interaction in one language are potentially capable of affecting the bilingual's other language(s) (see Figure 4). Accordingly, conceptual transfer is defined as the effects of language-mediated conceptual representations and of the resultant patterns of thought on a learner's (bilingual's) use of both first and second languages. Such a wording clearly implies that both languages may generate conceptual contrasts which are then fed into the cognition base and passed on to the other language (Jarvis 1998; Jarvis and Pavlenko 2008; Pavlenko 2009). It also makes clear that, despite its alleged conceptual underpinning, the Conceptual Transfer Hypothesis is mainly concerned with linguistic phenomena. Chapters 2 and 3 present an in-depth analysis of the issue.

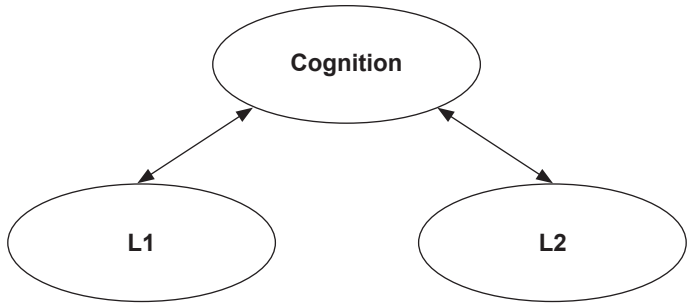

Figure 4. Bidirectional interaction between languages and non-linguistic cognition in bilingual memory

1.6. Conclusion

This chapter has reviewed current thinking on the status and form of conceptual representations within the bilingual mind, as envisaged by the Hierarchical Model of Bilingual Memory (Kroll and Tokowicz 2001). It has also examined proposals regarding the relationship between the conceptual and linguistic levels, placing special emphasis on the possible forms that the interactions between them might

take. Although the review is by no means exhaustive, it has presented frameworks that offer relevant insight into the human conceptual system and reveal something fundamentally important about its nature, functions and relationship to language. The dynamics of the latter are the focus of the next chapter.

Chapter 2

Linguistic relativity

No analysis of the interplay between linguistic and conceptual representations would be complete without a discussion of the Theory of Linguistic Relativity, which lies at the core of the debate over what counts as conceptual transfer and how its occurrence can be ascertained. The present chapter contains an appraisal of current thinking on the issue, as well as an overview of the research conducted with monolingual and bilingual subjects for the purpose of testing the legitimacy of relativistic claims. The discussion is undertaken in the context of three distinct strands of relativity-oriented research: the Sapir-Whorf Hypothesis, Slobin's Thinking for Speaking Hypothesis and von Stutterheim's Event Conceptualization Paradigm.

2.1. The Sapir-Whorf Hypothesis: Perspectives from research design

Broadly speaking, the contention that the language one speaks influences the way one experiences the world and thinks about it (Lucy 2004: 1) has come to be known as the *linguistic relativity* proposal. The idea is not new, for it dates back to Plato. In modern times, it was taken up by the German philosopher Wilhelm von Humboldt (1762–1835), who was the first to coin the now classic phrase: "learn a new language, get a new soul." In the 20th century, Humboldt's philosophical speculations acquired the status of a fully fledged academic position thanks to the work of Boas (1916), Sapir (1949) and Whorf (1956). It was Whorf, in particular, who stressed the powerful effects of the interplay of language, culture and cognition, voicing the opinion that language as a social and cultural code shapes perception of external reality, and that speaking a particular language entails thinking along the lines laid down by the language. This view could be taken as implying that thought is linguistic and that the lack of a word in a particular lexicon is indicative of the lack of an equivalent concept in the speaker's mind. Extreme as it was, this stance acquired the name *linguistic determinism* and was subsequently rejected as inaccurate (Kramsch 2004).[1] Linguistic relativity is generally accepted, however.

[1] One of the most frequently quoted arguments against linguistic determinism is the fact that translation is possible between languages and that languages other than the first one are often

To fully understand the scope of Whorfian theorizing, it is necessary to realize that thought is in itself a vague notion that encompasses both conscious and subconscious processes, reasoning and learning, as well as beliefs and attitudes. Some of the conscious processes happen to be linguistic in nature. Mental arithmetic and inner speech both rely on language, while visualization and imagination do not (Riemer 2010). This multi-dimensionality of thought, combined with the well-attested multi-dimensionality of language, makes it impossible to confine the description of their interaction to a single level. Indeed, relativistic effects can be observed across the entire linguistic spectrum. Thus, the semiotic level addresses the manner in which language as a displaced, abstract and symbolic code affects thinking in humans. The linguistic level concerns itself with whether and to what extent morphosyntactic and semantic categories of a specific language influence the way its speakers think about the world. Discursive relativity is connected with how verbal discourse practices shape the interpretation of linguistic messages in a specific socio-cultural context (Kramsch 2004; Lucy 2004). According to Lucy (2004: 3), an influence on thought is exhibited when a particular language feature "guides or supports cognitive activity and hence the beliefs and behaviours dependent on it."

To untangle the exact causal sequence referred to by Lucy, it is vital to study different types of behaviour, both verbal and non-verbal, and to single out language-conditioned and independent reactions, as well as their underlying conceptual basis (Nuyts and Pederson 1997; Pavlenko 1999, 2005). This in turn calls for an interdisciplinary approach to data collection and analysis because, as Nuyts and Pederson (1997: 6–7) observe, "characterizing conceptual structure will never be possible on the basis of an investigation of any single type of behaviour in isolation," and progress on this issue can only be made "by combining as many different types of language data and by taking into account as many different perspectives on language use as possible."

2.1.1. The domain-specific approach

Initially, relativity-oriented research had a monolingual bias. Its main concern was to investigate language-based concepts, e.g. colour, and their potential impact on patterns of non-linguistic categorization in unscreened populations. That was because it was not deemed essential to distinguish between monolingual and bilingual subjects. In his thoughtful appraisal of the state of the art in linguistic relativity research, Lucy (2004, 2011) distinguished two overall approaches to tackling the subject: the domain-specific and structure-centred approaches. The first one consists in singling out a domain of

acquired later in life when the conceptual system linked to the native language is fully developed (Köveckes 2006; Kramsch 2004).

experience, e.g. time and/or space, and describing it in a language-neutral way to see how it functions in a number of languages and whether or not it affects the speakers' cognition. Inspired by Lucy (1992a), Levinson (2003b: 19) adapted the procedure and recommended the following steps:

1. Pick a domain, i.e. concept.
2. Look into the linguistic coding of the domain in a number of languages and sort the coding patterns out according to the types distinguished. This step may require communication with native speakers so that the available linguistic resources might be uncovered.
3. Look into the non-linguistic coding of the domain in speakers of the languages under investigation.

Levinson warns that the last stage may create insurmountable obstacles as research will often have to be conducted in diverse cultures, giving rise to problems of comparability. There may be cultural, political and ethical difficulties, too. Finally, from a technical point of view, it is not easy to create designs revealing the underlying cognitive *modus operandi* without uttering a single word.

A classic example of the methodology used in this domain-specific approach is the study of colour by Lucy (1992a). The procedure he followed included a naming task where subjects were required to identify colours verbally. The second phase involved a non-linguistic recognition memory task performed on the same colours as the naming task. Here, the subjects were to recognize a number of hues they had just seen. Designs like this supply information on how the colour spectrum is broken up in different languages and investigate the relationship between linguistic coding, perception and memory. Lucy (2004) points to a serious methodological flaw inherent in this approach, namely, that the language of description, i.e. the (English) metalanguage, is used as a benchmark for assessing non-linguistic reality. Therefore, the resultant description of the problem is bound to be linguistically and culturally biased, and unlikely to enable an objective comparison (Lucy 1992a, 2004; Lucy and Gaskins 2003). With the wisdom of hindsight, Lucy's critical remarks seem to be a response to the methodology of Brown and Lenneberg (1954: 4), who on investigating colour coding in Zuni, a language spoken by a North American Indian tribe, came to the conclusion that the Zuni "often confused orange and yellow," in contrast to English speakers "who never made that error." In Zuni, orange and yellow are coded with a single term.

Overall, the extent of relativistic effects in the domain of colour is a proverbial bone of contention. An argument against linguistic relativity is based on the finding of six basic (focal) colours[2] in the languages of the world, which supported the

[2] The criteria set by Regier et al. (2005) for terms regarded as focal are that these words are monolexic, present in the vocabulary of every language user and are not subsumed within the range of another colour term. These universal colour terms are black, white, red, blue, green, and yellow (cf. Roberson et al. 2005).

view that colour categorization had a universal and/or physiological basis (for more information see the results of the World Colour Survey, Regier et al. 2005). In essence, the idea was not new because a 1970s study by Rosch Heider (1972) found that the Dani of Papua New Guinea systematically learned the names for focal colours faster than those for the non-focal ones, despite the fact that there were only two basic colour terms in the Dani language (Kövecses 2006). Even though Rosch Heider used eleven English basic colour categories, this outcome was interpreted as endorsing the universality of focal colours. However, her findings were not replicated in studies of Berinmo, also a Melanesian language with five basic colour words (red, yellow, black, white, and green; Roberson et al. 2000), and of Himba spoken by a nomadic Namibian tribe (Roberson et al. 2005). Like the Berinmo, the Himba use five basic colour words and do not lexically distinguish between *blue* and *green.* Despite using the same methodology as Rosch Heider, neither of these studies showed an advantage for those focal colours that Regier et al. (2005) classified as universal. Moreover, the research found numerous differences in recognition memory, learning and categorization between Himba and Berinmo speakers, who also diverged in their choices of best examples of specific colours and of category boundaries. Subsequent research (Roberson et al. 2008) was carried out in technologically advanced countries to refute allegations of cultural bias. In previous projects, the bias might have resulted from the participants' low education and lack of familiarity with the Western colour spectrum. For this reason, the languages under investigation included Korean, which discriminates between *yeondu* 'yellow-green' and *chorok* 'green', and English, which does not mark such a distinction. The results confirmed the initial prediction that categorical perception, i.e. perception of colour in terms of category limits, occurs at points that are linguistically marked as boundaries in the speakers' language. To put it another way, the Koreans saw a colour change at points that were indiscernible to English speakers. Similar results were obtained by Winawer et al. (2007), who studied the *siniy* 'dark blue' and *goluboy* 'light blue' contrast in Russian against the judgments of English speakers. As both studies used designs that did not engage memory, there was no need for the participants to use verbal labels in aid of memorization. Consequently, both studies are believed to offer insight into how linguistic coding affects non-linguistic categorization.

In sum, Roberson et al. (2005) see their data as solid relativistic evidence. Their position is reinforced by findings that children initially judge colour similarity on perceptual grounds. Cross-lingual contrasts begin to emerge once the basic colour terminology is mastered in the L1 (Roberson et al. 2005). Equally convincing are reports that perception in terms of language-bound categories can be observed when colours are presented in the right visual field, which suggests the involvement of the left hemisphere (Roberson and Hanley 2010). These effects disappear when participants are engaged in a simultaneous verbal suppression task, such as remembering an eight-digit number, but remain undisrupted during a comparable

non-verbal task (Regier and Kay 2009). In Roberson and Hanley's opinion, this shows the exact locus of linguistic influence on colour perception. The available evidence suggests that these findings extend to domains other than colour (Regier and Kay 2009). What also deserves mention is that even though some of the tasks used in the studies involved verbalization, they were free from the bias of earlier research in that each language was treated as an independent system of semantic categorization and there was no attempt to give priority to any of the languages concerned.

Finally, both the proponents and opponents of linguistic relativity acknowledge that colour categorization has a biological basis. Differences of opinion emerge with regard to the causes of diversity in the fragmentation of the colour spectrum, which is a universal physical experience that remains open to cultural influence and change. The latter in particular might have been stimulated by trading and travel, which would have led to the emergence of hues that are widely shared but not inherited. There is also speculation about the possibility that some colour categories may in fact be pre-linguistic (Regier and Kay 2009). One of the ways of resolving the debate would be to include bilinguals in the research to see if knowledge of an additional language has any effect on the classification of focal colours and category boundaries. Early findings (Caskey-Sirmons and Hickerson 1977; cf. Ervin 1961) imply that it might be a promising lead to follow (Athanasopoulos 2009; cf. Pavlenko 2005). For a discussion of pertinent research see Section 2.1.3.

Roberson's research was conducted with the intention of testing claims of universality in the domain of focal colours. A similar motive inspired her investigation of shape categories such as the circle, square and triangle (Roberson et al. 2002). According to Rosch (1973), they constitute universal prototypes, and as such are perceptually salient and independent of language. Because Himba lacks monolexic terms for these figures, it was considered suitable for the research. Drawing on the results of a name learning task, best example judgments and naming of novel shapes, Roberson and colleagues concluded that shape categories were not universal but were learned with the assistance of language. Moreover, they were most likely the product of Western culture and its linguistic and mathematical traditions. The study did not have a comparative character and hence lacked a control group.

A different rationale was implemented in designs investigating spatial frames of reference. Since Kant, it has been believed that the human body is the basic source of human intuitions about the partitioning of space. This egocentric or relative tendency can be observed in English whose speakers are likely to comment that *object X is to the right of object Y*. English also uses an intrinsic (object-centred) set of coordinates, i.e. *object X is beside object Y*. Languages such as Arrernte and Guugu Yimithirr (Australia), however, use an absolute system of coordinates based on the speakers' geographical situation and referring to the cardinal directions, as in *object X is to the north-east of object Y* (Majid et al. 2004). Relative and intrinsic descriptions tend to go together.

To ascertain the existence of relativistic effects in this domain, it would be necessary to show that non-verbal computations carried out by speakers of languages with different frames of spatial reference mirror the linguistic coding of space. In Levinson's (1997) research, this was achieved through the rotation paradigm, which required no verbal input or response. The exact procedure adopted in the research is as follows. Speakers of Tzeltal, a Mayan language with absolute spatial coordinates, were stood in front of a table with an arrow on it. The arrow could be pointing to the right or left. The individual was then asked to turn round and face another table with yet another arrow on it. His/her task was to reproduce the arrangement from the first table. The project also used Dutch controls, and hence had a comparative character (Levinson 1997, 2003b) as Dutch, like English, uses both relative and intrinsic coding. The results demonstrate a consistent trend: Even though increasingly complex designs were used, Tzeltal speakers produced absolute responses anchored to external points, such as landmarks. Consequently, they preserved the arrow's original orientation. The judgments of the Dutch participants were decidedly non-absolute since the arrow was inverted on the right-left axis. Nearly identical correlations between linguistic frames of reference and spatial reasoning were obtained by Pederson et al. (1998). Pederson's team designed an animals-in-a-row task along the same lines as Levinson's arrow test, and conducted their investigations among speakers of Arrernte, Dutch, and Japanese. Japanese uses relative coordinates.

Interestingly enough, gestural expression appears to mirror linguistic coding. Moreover, the choice of spatial coordinates turns out to be independent of cultural and environmental/geographical factors, such as living in an urban or rural setting. Suggestions that residence in a rural context with conspicuous landmarks could encourage greater reliance on environmental factors, thus triggering absolute coding of space (Majid et al. 2004) have not been confirmed (Slobin 2003).

Finally, a study that also deserves mention, despite diverging from the Lucy domain-centred paradigm, is that by Casasanto and Boroditsky (2008). It explored the perception of time in terms of space within the framework of conceptual metaphor theory and established that non-verbal visual estimations of durability were directly linked to whether the participants' languages expressed time in linear (spatial) terms, e.g. *a long holiday*, or as an amount of substance, e.g. *a lot of time*, as is the case with Greek. In general, the study supports the basic premise of the conceptual metaphor theory (see Section 1.2.4) that abstract concepts have metaphorical structure and depend on concepts grounded in physical experience. For instance, imperceptible time tends to be represented in terms of perceptible space or amount of substance. These source domains do not appear to be universal but language-specific. As for linguistic relativity, Casasanto and Boroditsky (2008) succeeded in showing that intensive use of linguistic expressions portraying time as a line observably influences perception of time in visual tasks. This shows that

Whorfian effects can be purposely induced, and that language influences habitual thought about abstract domains.

2.1.2. The structure-centred approach

The second approach recommended by Lucy (2004) is structure-centred and looks into how specific grammatical categories, e.g. number, function across languages and categorize reality. Because it requires extensive contrastive analysis of a number of languages, the approach is difficult to implement. The positive side is that it is accurate in identifying structural differences and the ensuing cognitive mindsets. Studies designed to test this idea include, among others, Lucy (1992b) and Lucy and Gaskins (2003). The latter investigated how American English and Yukatec Maya mark the plural on inanimate nouns. More specifically, English draws a distinction between countable nouns which denote concrete objects and take the plural -s, and mass nouns which signify an unbounded mass and which do not take the -s ending and cannot be directly modified by a numeral. In Yukatec Maya, all inanimate nouns behave like mass nouns. That is, nouns referring to concrete objects and those denoting non-individuated substances are not syntactically distinguished and consequently are not obligatorily marked for the plural. Secondly, whenever Yukatec expresses number, the noun must be preceded by a numeral classifier specifying its shape and/or material properties, e.g. *un-tz'iit kib* 'one long thin candle' (Lucy and Gaskins 2003: 470). In line with the linguistic relativity hypothesis, when dealing with concrete objects, English speakers habitually pay attention to shape because it signifies individuation, while Yucatec speakers attend more closely to material composition. To test this assumption, Lucy and Gaskins (2003) used triads of objects consisting of a pivot and two alternate options: one the same shape, the other the same substance as the pivot. The participant's task was to decide which object was more like the pivot. The results confirmed the predictions of the study in that, in the case of simple objects that did not have obvious uses, Yucatec speakers favoured the material options, while the English speakers were inclined to categorize according to shape. In a different study, Lucy (1992b) discovered that English speakers are in general more sensitive to number when confronted with pictures of animals and discrete objects. Yucatec users, by contrast, remain aware of changes in number only when dealing with animate entities, in accordance with the grammatical encoding of their language. The study probed responses to pictures showing scenes of everyday life and different numbers of various types of referents. The participant's task was to remember the pictures and match them in terms of similarity.

Both studies show that conceptual encoding in non-verbal tasks mirrors structural patterns (Levinson 1997: 38) and that language has the potential to sensitize people to those aspects of experience which it encodes. The research does not,

however, allow researchers to ascertain whether and/or to what extent conceptual representations are independent of language (Green 2000), as non-verbal designs do not preclude silent verbalization on the participant's part. In this connection, Green (2000) contends that reliable insights may be obtained only by completely blocking the use of language in laboratory conditions. As explained earlier, findings from research into colour naming seem to fit the logic of this argument.

The last grammatical category that has received a lot of attention from relativistically-oriented research, while at the same time producing conflicting findings, is that of grammatical gender. Grammatical gender tends to be marked morphologically on the constituents of the noun phrase, i.e. pronouns, determiners, nouns and adjectives. Languages exhibit differences with regard to the elements that carry gender information. For instance, in German, only pronouns and determiners are consistently marked for gender, with nouns and adjectives signifying it only occasionally. Spanish and Polish, by contrast, mark gender across the noun phrase and are therefore gender-loaded (Sera et al. 2002). Additionally, in Polish, the subject nominative determines the gender of the verb through the relationship of agreement. Differences also exist with regard to the number of gender categories, which on average ranges from two (Spanish, French and Italian) to three (German and Polish). Languages such as Thai are reported to have twenty categories (Sera et al. 2002), while English has no grammatical gender. Finally, grammatical gender is arbitrary, and as such may be used to denote asexual and inanimate referents.

A number of recent studies of gender retrieval and transfer suggest that gender information is stored at the lemma level (Salamoura and Williams 2007; Scheutz and Eberhard 2004), implying that gender is for the most part a syntactic phenomenon that controls agreement in the phrase/sentence. Of interest to linguistic relativity is whether it may influence non-linguistic conceptualization of objects, thus resulting in habitual attribution of masculine or feminine characteristics to inanimate objects in conformity with their grammatical gender. The non-verbal tests that were used to research this issue took the form of judgments and ratings of masculinity/femininity and similarity, memorization tasks, picture matching, and voice attribution (Bassetti 2007). Voice attribution was applied in perhaps the most influential study in the field, that of Sera et al. (1994, 2002). The participants, who were speakers of Spanish (Sera et al. 1994), were asked to assign either a male or a female voice to pictures of inanimate objects that were either labelled or not. Significant gender effects were found in both cases. On replicating the study, the authors succeeded in isolating those components of the gender system that made speakers of Spanish and French attribute gendered qualities to inanimate objects; a tendency undetected in users of German and English. Overall, factors like case marking and gender loadedness turned out to be of little consequence because verifiable cognitive effects were found to arise from a two-category system that correlated with natural gender for animate entities. This conclusion was subsequently corroborated by Bassetti (2007)

and Ramos and Roberson (2011), who obtained significant effects for Italian and Portuguese, respectively, both of which are dual-gender languages. Reflecting on findings from Portuguese, Ramos and Roberson (2011) observe that gender effects are the strongest in tasks that require linguistic processing and make direct reference to gender distinctions. These effects are reduced when language and overt gender references are removed from the task (cf. Cubelli et al. 2011).

Another finding worthy of note is that gender-related relativistic effects seem to be constrained by developmental factors since they have been found in children aged 8 and above (Sera et al. 2002). In the light of accounts of hemispheric involvement in relativity, this finding opens a new avenue for research into the maturational and neural bases for cognitive and linguistic development.

2.1.3. The bilingual perspective

The inclusion of bilinguals in studies of conceptual representation produced a batch of data confirming the Whorfian effects reported for monolingual populations. Besides providing an account of conceptual dynamism, which in bilinguals manifests itself as the formation of new concepts, along with conceptual coexistence, integration, restructuring and attrition (Cook et al. 2006; Pavlenko 1999, 2005, 2011b), the data imply that bilinguals have a larger and more varied conceptual base and that their categorization and processing patterns differ from those of monolinguals. That this may indeed be the case was first shown by Bloom (1981), who conducted a contrastive study of how Hong Kong Chinese and English monolinguals, and Chinese-English bilinguals understood hypothetical and counterfactual statements in a reading passage. Although the Chinese are capable of discussing unreal events, their language, unlike English, does not syntactically distinguish between hypothetical situations, such as *If I were a rich man, I would give millions to charity*, and counterfactual situations referring to imaginary events that did not take place, i.e. *If I had been rich I would have given millions to charity*. Chinese uses just one construction that conflates both conditions (Odlin 1989). Consequently, the Chinese are more dependent on their knowledge of the immediate context when interpreting hypothetical information. The reading text used by Bloom contained a number of counterfactual statements and described a highly unreal scenario. The English monolinguals turned out to be the most successful in understanding the nature of the situation, while the Chinese were the least accurate. As for the Chinese-English bilinguals, their scores fell in between those obtained by the two monolingual groups. Furthermore, they did better on the English passages than on their Chinese translations. In Bloom's opinion, this constituted direct evidence of increased sensitivity to unreal conditions in abstract discourse and was brought about by knowledge and use of a system that formally encoded counterfactuality. Bloom argued it was a Whorfian effect (Odlin 1989).

Because the study focused on language comprehension and used linguistic stimuli, it did not yield any of the non-linguistic outcomes alluded to in the literature. However, with the wisdom of hindsight, it becomes obvious that Bloom's data testify to the existence of cognitive processes that extend beyond the linguistic domain, thus taking the form of knowledge and skills transfer. Such transfer occurs within the multi-competent mind and contributes to greater cognitive efficiency and flexibility[3] (Cook 2003; Kecskes and Papp 2000a). Lucy (1992a: 212) comments that at the heart of the study was a deep belief that "language influenced abstract conceptual thought more strongly than the perception of reality and that the effect of a pre-existing [verbal] label […] is much greater for less perceptually based categories," with the latter view being echoed by recent research in the field.

A study showing non-linguistic Whorfian effects is the Nivea experiment by Cook et al. (2006). It revealed that extended contact with L2 English in its natural environment is likely to change L1-induced preferences for categorization in terms of substance in speakers of L1 Japanese. More precisely, on replicating the Imai and Gentner (1997; cf. Lucy and Gaskins 2003) triads matching test with bilingual Japanese residents in the UK, Cook et al. (2006) found that individuals with more than 3 years' residence in the country showed considerably more preferences towards shape-based categorizations than learners with a stay of less than 3 years. In other words, there was a shift away from the monolingual norm, which placed L2 learners with longer residence in the UK between the L1 and L2 norms. In Cook's (Cook et al. 2006) opinion, this lends support to the idea that language may induce the restructuring of the conceptual system. One of the drawbacks of the study is that Cook did not use monolingual controls, but instead compared his bilingual data with the controls in the Imai and Gentner study (Athanasopoulos 2006). Since there were differences in design between the two projects, i.e. some of the substances were different, the Nivea experiment can only be treated as a preliminary study.

More evidence on this score comes from Athanasopoulos (2006), who repeated Lucy's (1992b) picture-matching test designed to investigate awareness of number in Yucatec and English speakers. The study was conducted in the UK and focused on Japanese-English bilinguals. In Japanese, nouns are not marked for number. Overall, Athanasopoulos found an asymmetry in performance, with intermediate Japanese-English students behaving like Japanese monolinguals and the advanced ones approximating to the monolingual English norm. Another interesting result

[3] Bloom's findings came under criticism from Au (1983), whose research did not replicate Bloom's results. A point worth stressing is that both researchers were preoccupied with the impact that structural properties or their absence had on text comprehension and did not consider advanced proficiency in two languages to be a factor in their analyses. Bloom's findings were confirmed by Yeh and Gentner (2005), who found that the Chinese are at a disadvantage when dealing with counterfactuals involving unfamiliar topics. In such cases, they are forced to rely on contextual clues, which slows them down in comparison to English speakers. The participants were English and Chinese monolinguals. The Chinese speakers rated their proficiency in L2 English as very low.

was that familiarity with obligatory number marking and general L2 proficiency overrode factors such as the length of residence in the target country conventionally regarded as the driving force behind conceptual change in bilinguals (Pavlenko 1999, 2005; cf. Cook et al. 2006). Since all of the advanced students had stayed in the UK less than 2 years, with some of them staying for 3 months only, there is good reason to believe that socio-cultural factors play a less important role than was originally believed. Also worth keeping in mind is that from a developmental perspective, English pluralization is a relatively simple concept, and as such tends to be mastered very early in the learning process. Japanese learners of English master it much later than speakers of other L1s, however (Hakuta 1974). The reason for this delay may be the lack of an equivalent structure in their L1 but this does not explain the differences in the performance of intermediate and advanced L2 English participants. A tempting option to consider is that there might be an L2 acquisition threshold which exercises an impact on the conceptual level, and which remains dependent on the frequency and accuracy of use of specific syntactic structures. One also needs to consider the nature of proficiency itself and the way proficiency measures delimit level boundaries, and whether these boundaries are linked to the acquisition orders reported for specific L1 groups. One thing is clear: without operational L2 proficiency measures constructed with particular native languages in mind, it may be difficult to provide a convincing explanation for this result. What the study makes apparent is that those L2 English Japanese learners who use pluralization correctly are also likely to show L2-like categorization choices.

Empirically problematic was the fact that the 2006 study did not control for context and language mode effects. Consequently, there was a chance that the observed effects resulted from the bilinguals' adjustment to the context of testing, which encouraged L2-based behaviour. This problem was addressed in a subsequent study by the same author (Athanasopoulos and Kasai 2008), who this time carefully distinguished between intermediate and advanced L2 users and collected data in both L1 and L2 settings from both monolingual and bilingual subjects. The latter comprised Japanese students in England and L2 English learners in Japan. To control for language mode effects, the bilingual sample was divided into two groups tested in either English or Japanese, depending on their place of residence, i.e. the individuals residing in Japan were tested in Japanese; UK residents were tested in English. In this study, too, advanced L2 learners behaved more like L2 monolinguals, while the choices of the intermediate learners resembled those of the L1 monolingual group. A novel element in the research was that, in the triads, the substances, e.g. cork, and objects were replaced with colours and unusual two-dimensional shapes, respectively, and therefore could not be signified by words. In the author's opinion, the unavailability of conventional linguistic labels reduced the risk of subvocal verbalization.

Quite unexpectedly, both monolingual groups preferred shape-based classifications, though there was a noticeable difference between them because

only 62% of the Japanese participants opted for shape, as opposed to over 90% of the English monolinguals. Athanasopoulos and Kasai (2008) interpret this result as a relativistic effect induced by the lack of verbal labels, which could have triggered processing in terms of the countable/uncountable parameters. The main implication of this study is that the acquisition of a new language provokes the restructuring of the existent L1-based conceptual representations at the most advanced level of L2 proficiency. What also comes as a surprise is that the setting of acquisition, i.e. formal vs. natural, did not seem to be of significance to the process in question.

Less definitive findings were reported by Ameel et al. (2005), who looked into the L1 and L2 kitchenware naming patterns of Dutch-French simultaneous bilinguals in Belgium, where cultural differences between the French- and Dutch-speaking communities are virtually non-existent. Regardless, the naming data produced by both monolingual groups showed considerable differences. The bilinguals in turn followed naming patterns that diverged from both L1 and L2 norms, thus implicating the existence of a merged lexical/semantic system. The authors believe that the observed variety of naming stems from the socio-historical development of the languages concerned. In the similarity judgment test, all of the participants were consistent in how they perceived object similarity. Their judgments turned out to be independent of linguistic distinctions. Such a result does not come as a surprise because an earlier study by Imai and Gentner (1997) found no differences between American and Japanese participants with regard to objects whose shape reflected their use and/or function. This hints at the possibility that concepts developed for clearly individuated and functional artefacts are less susceptible to language than those for perceptual categories, such as colour. In respect to the latter, Roberson et al. (2005) observe that similarity alone is not sufficient to establish categories. Therefore, we need language to impose boundaries on an otherwise unindividuated continuum of shades of colours.

Research into how bilinguals carve up the colour spectrum is one area that has yielded definite results in favour of linguistic relativity, as found by Athanasopoulos (2009). The colours he investigated included the English colour *blue* and its Greek counterparts *ble*, a darker shade, and *ghalazio*, a lighter one. The participants were L1 Greek-English bilinguals who were split into two groups: an advanced group residing in the UK and an intermediate one tested in Greece. Both groups were given a naming task and a *best example* test meant to elicit the best representatives of each of the two colour categories. The language of the investigation was Greek and the researcher conducting the tests was a native speaker of the language. The study found no major differences between the groups in the naming task. In the *best example* test, however, there was a shift towards the English focus for *ble* and away from it for *ghalazio* among the advanced subjects. From a perceptual perspective, this intensified the contrast between the two colour categories. On the linguistic side, the shift towards the L2 *blue* focus was interpreted as L2-induced convergence, while the change within *ghalazio* was perceived as attrition of L1 colour terminology.

The study also included a similarity judgment test, but it did not produce conclusive results (cf. Athanasopoulos et al. 2011).

In addition to claims of language-induced changes which, given the continuity of the colour spectrum, tend to be subtle but empirically verifiable, the study sheds light on the factors contributing to such restructuring. These include the length of stay in the L2 country and the semantic salience of conceptual categories. As regards the former, significant results were obtained for individuals with about 24 months' residence. As for the latter, Athanasopoulos (2009: 92) concludes that only semantically salient linguistic categories may have an impact on cognition, hence the shift towards the superordinate category *blue*. In their subsequent study, Athanasopoulos et al. (2011) singled out the amount of L2 use as the most cognitively potent factor, with the length of stay in the L2 setting and testing context remaining insignificant. This reveals the complexity of the relation, as the amount of language use, length of stay and the level of L2 proficiency appear to be mutually dependent.

Finally, a brief comment is in order with regard to research into the influence of grammatical gender on concepts in bilinguals. It should be pointed out that most of the few studies conducted to date (Andonova et al. 2007; Bassetti 2011; Boroditsky and Schmidt 2000; Boroditsky et al. 2003; Ervin 1962) employed language-based techniques and, despite showing definite gender effects, lacked validity. Moreover, some of them, like the Boroditsky research, are open to methodological criticism since they encouraged strategic use of gender information as a way of solving unusual tasks, e.g. finding similarity between a girl and a toaster (Kousta et al. 2008). Replication of the research has additionally revealed that some of the elicited judgments might have been induced by the application of a binary, i.e. masculine/feminine, scale since, when in doubt, the subjects willingly opted for the 'I don't know' option if given the chance. This was particularly true of stimuli that seemed indeterminate in terms of gender (Latkowska 2009).

A more precise investigation was conducted by Bassetti (2007), who explored voice attributions to drawings of concrete objects. The participants were Italian-German bilingual children whose first language was Italian and who learned L2 German after the age of four and were taught through its medium in Italy. The control group was composed of monolingual Italians. The items selected for the study had opposite grammatical genders in the two languages and lacked gender connotations. The results revealed that the monolingual children's voice choices were affected by grammatical gender, while the bilinguals did not show any gender effects. In Bassetti's opinion, this indicates that bilinguals accommodate L1 and L2 concepts which undergo a restructuring process. Consequently, bilinguals draw on a different conceptual base and categorize objects differently from monolinguals. Since the study was conducted in a culturally homogeneous context, the reported differences between monolingual and bilingual subjects cannot be attributed to cultural factors.

The extent to which L2 gender distinctions affect voice attributions in bilinguals was also the subject of a study by Kurinski and Sera (2010), who tested native English-speaking learners of Spanish at 10-week intervals over the period of one academic year. Participants with a lower level of proficiency in Spanish additionally took a test on the gender of the examined nominal categories. The researchers report definite gender effects in monolingual Spanish speakers who provided the baseline data for the study. The L2 Spanish learners' voice attributions were less consistent and followed gender distinctions for some objects after only 10 weeks of L2 instruction. Because this tendency did not increase with learners' proficiency, the authors conclude that the L2 has a limited impact on conceptual categories, giving way to the formative powers of the L1 (cf. Chłopek 2012).

A study that did not find gender effects despite using the tried and tested voice attribution formula was that conducted by Chłopek (2012), who investigated linguistic relativity in the context of Polish-German-English trilingualism. The participants self-rated their proficiency in English and German, while the stimulus pictures were labelled in English. The results show minimal but statistically insignificant L1 effects and no L2 or L3 impact on categorization, which also turned out to be independent of L2/L3 proficiency.

In sum, the reviewed bilingual data are in accord with the conclusions of the monolingual studies in that they do not support the blanket view of relativity as a cover for most, if not all, conceptual-linguistic developments within the mental lexicon. The picture that has emerged from the analysis is that relativistic effects are subtle, domain-specific and far from pervasive.

2.2. The Thinking for Speaking Hypothesis

The complexity of the interaction between language and thought becomes even more apparent through an analysis of the processes involved in language production. This is because online processing requires conceptual data containing sensory, experiential and encyclopedic information to be pared down and packaged into schematic linguistic representations in accordance with specific linguistic rules. Dipper et al. (2005: 420) stress that these processes are bidirectional and function as "both feedback and feed forward" operations at the interface of language and thought. A blueprint for this position has been provided by Slobin's Thinking for Speaking Hypothesis (Slobin 1996, 2003, 2004, 2005), where *thinking* and *speaking* refer to *thought* and *language*, respectively, by way of accentuating the dynamics of online verbalization.

Being a proponent of linguistic relativity, Slobin[4] argues that verbalization induces special, i.e. language-dependent mode of thinking that is carried out online

[4] Primary input for Slobin's theory came from oral and written narratives elicited with the *Frog, Where Are You* picture story. To date, the languages studied by Slobin and his collaborators include Spanish, French, Turkish, Korean, Thai, Dutch, Icelandic, Swedish, Polish, Serbo-Croatian,

as messages, both spoken and written, are being formulated. The formulation process is automatized and occurs before the selection of specific lexical items (Papafragou et al. 2006). Slobin (1996) maintains that conceptual representations of external events can never be fully expressed by language which selectively schematizes them according to available grammatical, semantic and discoursal resources.[5] The remaining unverbalized information is provided by the background and inferred by the listeners who draw on experience-based conceptualizations of related events and on pragmatic principles (Dipper et al. 2005). The Thinking for Speaking Hypothesis is increasingly invoked as a weak version of linguistic relativity (Han and Cadierno 2010).

2.2.1. Background to the Thinking for Speaking Hypothesis: Talmy's typology of motion verbs

Thinking for speaking gained impetus thanks to research into Talmy's (1985, 2003) pioneering classification of languages according to their typical lexicalization patterns of motion. It is widely accepted that motion constitutes change of location of an object with respect to another object. A motion event is made up of several components, including Motion, Path, Manner, Ground and Figure (Talmy 2003; cf. Lakoff 1987). Path refers to the trajectory or directionality of a moving object (Figure) and specifies the Source, e.g. *from the supermarket*, and Goal of the activity, e.g. *to the bus stop*, as well as its Medium, e.g. *through the Red Square*. Ground is the reference object, while Manner covers the motor patterns of movement, its rhythm and pace, and the effort put into it. Examples 6a and 6b present the main elements of a simple motion event in English (Slobin 2005; Talmy 1985).

(6a)	*John*	*ran*	*into*	*the room.*
	Figure	Moton + Manner	Path	Goal
(6b)	*The bottle*	*rolled*	*off*	*the table.*
	Figure	Motion + Manner	Path	Ground

Languages differ with regard to how these components are encoded syntactically. On the whole, Talmy (2003) speaks of three types of languages, two of which are

Portuguese, Mandarin, German, Basque, West Greenlandic, Tzeltal, Hebrew, Warlpiri and Arrernte (Australia), as well as English and Russian (Slobin 2003, 2005). In addition to picture description, the data collection techniques used by Slobin included conversation transcripts, corpora searches, timed word enumeration tasks, and an analysis of creative fiction and of translations of prose, e.g. *The House of the Spirits* by Isabelle Allende.

[5] At this point, Slobin unwittingly admits that there may be a dissociation between linguistic and conceptual representations.

spoken by a large proportion of the world's population. These are *verb-framed languages* (V-languages) encoding PATH and MOTION in the main verb of a clause, e.g. *enter*, *exit*, and *satellite-framed languages* (S-languages) where PATH is encoded in a satellite, i.e. an attached verb particle (*in*, *out*), prepositional phrase (*into the cave*) or a verb prefix. Prefixes are used in Slavic languages, e.g. ***w**-biec* 'in-run' in Polish. Both language types also differ as regards the MANNER of motion. In satellite-framed languages, often referred to as high-MANNER languages, it is conveyed by the verb. Consequently, such languages have a larger stock of MANNER verbs, the less frequent of which convey finer semantic distinctions. A classic example is English, whose MANNER lexicon contains several hundred verbs lexicalizing components such as speed, motor patterns, force dynamics or attitude (Kopecka 2010). Verb-framed languages, by contrast, encode MANNER of motion by means of an adjunct or simply do not mention it (Slobin 2003), and are hence labelled low-MANNER languages. That said, it is important to stress that most V-languages have basic MANNER verbs such as *walk*, *run*, *jump*, *dance*, *roll*, *swim* and so on. In Talmy's typology, MANNER and CAUSE of motion are treated as semantic equivalents.

At the discourse level, S-languages accumulate PATH particles and prepositional phrases next to the main verb and encode both PATH and MANNER in a single clause (Allen et al. 2007), while V-languages typically use two or more separate clauses, as shown in Example 7, and/or omit MANNER information altogether. Cadierno (2010) points at other intra-typological differences within the V-framed group, where Turkish, Basque and West-Greenlandic offer more detailed PATH descriptions than the category template, i.e. Spanish.

(7) English original: *I ran **out** the kitchen door, **past** the animal pens, **towards** Jasón's house*.
Spanish translation: *Sali por la puerta de la cocina (I **exited** the kitchen door), pase por los corrales (**passed** by the animal pens), y me dirigi a casa de Jasón (and **directed** myself to Jasón's house)*. (Slobin 2005)

Talmy's general formula was subsequently modified by Aske (1989), who, based on an analysis of how Spanish verbs lexicalize motion, discovered a general tendency of V-languages to use MANNER verbs only in combination with atelic PATH phrases, i.e. those that do not denote event completion or boundary-crossing, as shown in Example 8:

(8) *We walked along the beach* (French: *Nous avons marché le long de la plage*). (Pourcel 2003: 55)

Since S-languages make use of both telic and atelic PATH satellites, of which the former clearly indicate an activity's endpoint and/or boundary crossing (Cadierno and Lund 2004; Papafragou et al. 2008; Pourcel 2003), the differences between the

two language types are limited to how they encode bounded (telic) situations. Here, V-languages allow PATH verbs only. Satellite-framed languages include Germanic, Celtic, Slavic and Finno-Ugric languages, while verb-framed languages comprise Greek, Basque, Japanese, Korean, Romance, Turkic, and Semitic languages (Riemer 2010).

The third category proposed by Talmy contains languages such as Atsugewi and Navajo. Both conflate FIGURE and MOTION in the verb, as exemplified by the English *It rained in through the bedroom window* (Aske 1989). Since Slobin's framework is built around the satellite/verb-framed contrast, the current discussion will follow suit and report on relevant research within the Slobinian framework.

2.2.2. Critique of Talmy

First, however, it is both vital and instructive to address the criticism that has been levelled at the theory since its launch in 1985. To begin with, it has been shown that the MANNER/PATH distinction is by no means absolute, as speakers of both language types tend to use patterns that diverge from the category norm. In fact, Beavers et al. (2010) note that most languages exhibit features of more than one category.[6] For instance, even though Turkish is a V-language where MANNER and PATH are specified in separate clauses, some of its motion verbs convey both elements in a way typical of S-languages, e.g. the Turkish word for *climb* (Jarvis and Pavlenko 2008). Similar trends have been reported by Pourcel and Kopecka (2005) for French, which allows MANNER to be encoded in the main verb and PATH in a gerund, as in *courir en montant* 'run ascending'. Moreover, French has a number of frequent motion verbs containing a PATH prefix, e.g. ***a****-ccourir* 'run to' and ***a****-tterir* 'touch down, land' (Kopecka 2006). By the same token, both Polish and English, despite being satellite languages, are capable of encoding MANNER in an adjunct (adverbial of manner), as in *opuścić salę biegiem* 'leave a room at a run' or *She came running to meet us*. Brown and Gullberg (2008) in turn found that, contrary to typological trends, Japanese (V-language) speakers use a wide range of MANNER verbs as well. The tendency has come to light thanks to the findings of Ohara (2004; cited in Brown and Gullberg 2008), who, on analysing the translation of Tolkien's *The Hobbit* into Japanese, found the verb to be the prevalent means of conveying MANNER information. What is more, the verbs often conflated MANNER and PATH. Further

[6] Slobin seemed well aware of the limitations of Talmy's work since he modified the original Talmyan typology by introducing yet another category of equipollently-framed languages (E-languages) (Slobin 2004, 2006). It encompasses serial-verb languages such as Thai, which expresses PATH and MOTION by using two or three verbs in a clause. None of the verbs is marked for finiteness, as in the Thai sentence *chán dəən (paj)* 'walk go (I am walking)' or *fly exit come one only owl* in Mandarin Chinese (Slobin 2006: 4). In Mandarin, all three options, i.e. V-, S- and E-framed are possible (Beavers et al. 2010: 357).

still, Beavers et al. (2010: 368) demonstrate that English allows motion verbs to encode neither PATH nor MANNER since these may be encoded in the satellites, as portrayed in Example 9:

(9) *John moved stealthily out of the bedroom.*

In some S-languages, e.g. English, the coding of MANNER is optional. Talmy (1985) enumerates the following English verbs which carry PATH but not MANNER: *enter*, *ascend*, *descend*, *cross*, *pass*, *circle*, *advance*, *proceed*, *approach*, *arrive*, *depart*, *return*, *join*, *separate*, *part*, *rise*, *leave*, *near* and *follow*. At the opposite end are languages encoding MANNER obligatorily (Jarvis and Pavlenko 2008) but with varying degrees of salience, e.g. Russian.

In the light of the above, the inescapable conclusion, one that was drawn by Talmy himself (Talmy 1985: 62), is that the MANNER/PATH distinction only reflects the most characteristic, frequent and colloquial ways of talking about motion. This in turn might be determined by factors such as ease of processing (Slobin 2004). Also, it should not escape notice that individuals have at their disposal a variety of linguistic and non-linguistic devices that may compensate for the lack of category-specific lexicalization. In this connection, Slobin (2004) lists adverbials of manner, ideophones, i.e. words imitating sounds and often functioning as adverbials, and gestures. The latter in particular tend to supply MANNER information that has not been encoded linguistically.

Somewhat overlooked by both Talmy and Slobin is the fact that in some languages verbs of MANNER implicate PATH in addition to encoding MANNER. That this may be the case has been pointed out by quite a few researchers with regard to a representative number of languages. For instance, in English verbs like *walk*, *run*, *swim* and *fly* lexicalize both MANNER and the direction of motion which proceeds towards an unspecified GOAL (Tsujimura 2007: 403). Likewise, *climb a tree* expresses both MANNER and upward movement. Malt et al. (2010) used video clips to elicit MANNER verbs for the two basic biomechanical categories of *running* and *walking*. They found that, contrary to typological trends, Spanish and Japanese used conventional MANNER verbs to observe the distinction between the categories. What is more, the Japanese subjects never used their main walking term to refer to *walking* ***in place*** or ***backwards***, which in the authors' opinion, indicates that for the Japanese, forward movement is part of the meaning of *walk*. In English, by contrast, movement in a direction other than *forwards* has to be specifically qualified by an adverb or prepositional phrase, as shown above. Other studies along these lines are those of Allen et al. (2007) and Férez (2007). The latter enumerates a number of Spanish and English verbs conflating PATH and MANNER information. The list includes *flee*, *slink*, *scurry*, *scuttle*, *charge*, *track*, *stalk*, and *rove*, together with their Spanish analogues. Allen et al. (2007) in turn divide English MANNER verbs into those that convey the idea of MANNER causing a change of location, and those

where MANNER does not have such an effect (cf. Beavers et al. 2010; Willim 2006). For example, *run* denotes continuous movement forward, while *rotate* does not convey this notion. Obviously, one could speculate that Allen's observations allude to the prototypical scenarios developed for specific MANNER verbs rather than their semantic composition (cf. Jackendoff 1990). Although clearly dependent on the adopted theoretical stance, this perspective is of relevance, particularly in view of the fact that pragmatic and contextual factors (Beavers et al. 2010; Willim 2006) often conspire to give the impression of motion along a trajectory, as shown in Example 10, where *climb* expresses PATH but not MANNER even though, overall, it tends to be classified as a MANNER verb.

(10) *The plane climbed to 9,000 feet*.

Taken together, these considerations create the impression that in linguistic renditions of directed motion, PATH is more semantically salient than MANNER (cf. Jackendoff 1990). Indeed, Talmy's (2000) modified framework includes PATH under the core schema of motion events, together with ASPECT, STATE CHANGE, and others. MANNER and CAUSE comprise supporting relations, i.e. those that may be but do not need to be conveyed. It is the locus of the core schema either in the verb root or in the satellite that determines classification as a V- or S-language. Relations within the core schema are implicational in the sense that if PATH is encoded in the verb, the remaining components will also be encoded. Although this modified version offers a more comprehensive perspective on the lexicalization of motion, the current discussion will concentrate on the PATH/MANNER contrast since it became a point of departure for investigations into thinking for speaking effects. As regards the advantage of PATH over MANNER, the evidence in support of this claim will be discussed on the basis of Polish, although it is likely to apply to other Slavic languages, too (cf. Pavlenko's 2010 analysis of the motion lexicon in Russian).

2.2.3. Directed motion in Polish

Overall, Polish classifications of motion verbs are more inclusive than the original Talmyan framework, and consequently incorporate many of the dimensions that Talmy (1985) was found to be lacking. Thus, Kubiszyn-Mędrala (n.d.; cf. Bojar 1979; Laskowski 1999) speaks of two semantically distinct verb categories referring either to change of location or to motion that does not result in locational change. Of relevance to the current discussion are change of location verbs which can be further subdivided into directed motion verbs and indeterminate (non-directed) motion verbs. The former denote one-way movement along a specific trajectory, e.g. *iść* 'walk' and *biec* 'run', while the latter encode habitual and/or iterative movement along an unspecified trajectory or in multiple directions, e.g. *chodzić* 'walk regularly'

and *biegać* 'run regularly'. In Talmyan terms, directed motion verbs communicate Manner, Motion and its directionality, i.e. Path. For instance, *biec* and *iść* both imply continuous movement forward. The meaning of iterative indeterminate verbs, such as *chodzić* and *biegać*, is restricted to Manner and Motion.

On the subject of semantic composition of motion verbs in Polish, Laskowski (1999: 50) explains that the following constituents should be considered:

(11) *Obiekt* *przemieszczał się* *przez pole* *od lasu* *ku rzece*.
Figure Motion Path Source Goal
'An object was moving across a field from the woods towards the river'.

He also points out that not all of these components are lexicalized at the sentence level as sentences with a complete motion representation are relatively rare in Polish. This is because quite a few motion components are implicated by the context.

In line with typological distinctions (Talmy 1985), most Polish motion verbs convey information about Manner. Laskowski (1999) broadly defines it in terms of intentionality, instrument (use of a vehicle or limbs), environment (water, air), speed, degree of contact with the surface, attitude, motor patterns (jump, walk) and so on (Kopecka 2010; cf. Slobin 2006). Manner verbs form the largest category of motion verbs in Polish. The language has very few verbs that express Path without simultaneously encoding Manner, e.g. *przybyć* 'arrive', *wyruszyć*/*ruszyć* 'depart', *przemieścić się* 'move from one place to another', *zbliżać się* 'approach', *podążać* 'follow, head', *przedostać się* 'get through', *mijać* 'pass', *udać się* 'make one's way to', *cofać się* 'move back', *wracać* 'return', *oddalić się* 'move away', *zmierzać* 'make one's way', *kierować się* 'head for' and *dotrzeć* 'reach'. Finally, it would seem that *ruszyć*/*ruszać* 'move' are neutral in terms of both Path and Manner and convey Motion alone.

On the whole, the Polish Manner lexicon is much smaller than its English counterpart and contains less than 100 items. It is also less diverse on account of encoding fewer fine-grained components of Manner. Those encoded the most frequently include ways of walking (30 verbs) and velocity (15 verbs). For reference, English has about 50 verbs depicting different types of gaits. Like other languages, S- and V-framed alike, Polish uses Manner modifiers in the form of adverbs (*szybko* 'fast'), nominal expressions (*galopem* 'at a gallop'), present participles (*kulejąc* 'limping'), comparatives (*jak szalona* 'like crazy') and adjectives (*pochyleni* 'with their backs bent'). Even though the use of modifiers is largely compensatory and modifying in character, they may sometimes be used to foreground Manner information, as in *Pieszo wrócił do domu* 'On foot he went back home'. Still, they are rather infrequent (Kopecka 2010).

Being a satellite-framed language (Talmy 1985), Polish encodes Path by means of a prefix. The prefix specifies the beginning and end of the trajectory, as well as the trajectory itself. It also entails the position of the speaker, expectancy of

arrival, departure from the starting point and approach to the endpoint (Krucka 2006). Janowska (1999) assigns spatial prefixes to three categories depending on the relation of the FIGURE to the GROUND. Adlative prefixes such as *od-*, *wy-*, *z/s-*, *roz-*, and *u-* , specify the starting point of motion, be it the inside of an object (GROUND), as in ***w**-yjść **z** domu* 'leave home', the object's surface (*z-ejść z drogi* 'get off the road') or its boundary (***od**-płynąć **od** brzegu* 'sail/swim away from the shore'). Ablative prefixes: *do-*, *na-*, *nad-*, *pod-*, *przy-*, *w-*, *za-*, *z/s-* , denote the FIGURE's proximity to the GROUND, specifying the number of objects or individuals involved (*z-jechały się tłumy* 'crowds have arrived'), boundary crossing (***w**-szedł **do** pokoju* 'he entered the room'), the exact point of contact (***na**-jechał **na** rower* '*he drove onto a bike'), along with the degree of proximity to the GROUND (***do**-jechać* vs. ***pod**-jechać* 'reach the destination vs. stop short of the destination'). Willim (2006) explains that, in Polish, verbs referring to caused/directed motion and change of location events require a spatial prefix whenever the event in question involves the crossing of a location boundary, as in ***w**-biec **na** scenę* 'to run onto the stage'. Change of location verbs that do not have a prefix obligatorily require a directional prepositional phrase, e.g. *udać się **do** Paryża* 'go to Paris' (Willim 2006: 218). Generally, spatial prefixes telicize events by delimiting their endpoints. The events also acquire a perfective reading.

The last of Janowska's categories consists of perlative prefixes: *prze-* and *o-*. These signify the distance covered during a motion event, as in ***prze**-płynąć rzekę* 'swim across the river'. Quite uncharacteristically for satellites, in Polish, perlative relations may be expressed by an instrumental noun phrase. This typological idiosyncrasy is illustrated by the following examples: *szli drogą, ścieżką, lasem* 'they walked the road, the path, the woods' (Nagórko 1998). Interestingly, as evidenced by the English examples, it does not seem to be restricted to Polish.[7] On the whole, Janowska's (1999) analysis focuses on 18 spatial prefixes that, by virtue of their number and the ensuing semantic diversity, yield great precision of description. The way prepositional phrases complement the wealth of detail provided by prefixation is discussed next.

Generally, prefixed verbs of directed motion connote prepositional phrases where the preposition often echoes the prefix, e.g. ***do**-jechać **do** centrum miasta* '**to**-go/come **to** the city centre' and ***w**-jechać **w** drzewo* '**in**-drive **in**-to a tree'. Sysak-Borońska (1974) stresses the functional interdependence of prepositions and case endings in the complement noun phrases, which she sees as exponents of spatial relations. Case endings may determine the character of the entire phrase by introducing a contrast between a locative and adlative reading. This is shown in Example 12:

[7] As the verb phrase does not contain a directional preposition, the only constituent containing PATH information in the above examples is the verb *walk*. It implies motion either in one direction, e.g. *iść*, or in random directions, e.g. *chodzić*, without specifying the trajectory or the GOAL.

(12)
Locative: *leżeć **pod** tramwaj**em*** (instrumental) 'to be lying under a tram'.
Adlative: *wpaść **pod** tramwaj* (accusative) 'to fall under a tram'.

In Polish, prepositional phrases can denote both bounded and unbounded events. There is disagreement over their syntactic status since Spencer and Zaretskaya (1998) see them as adjuncts, while Willim (2006) argues that they function as verb complements because they are obligatory in cases when a verb of motion does not have a prefix. Most crucially, a GOAL/directional prepositional phrase further qualifies the PATH of the motion event and can even impose a change of location reading on a basic activity verb, as in *Pchnęli samochód na bok* 'They pushed the car to the side' (Willim 2006: 214).

The evidence presented so far warrants the conclusion that Polish encodes PATH throughout the predicate, thus prioritizing it over MANNER. Despite being finely synchronized with PATH and perceptually salient, MANNER constitutes an addition to an otherwise complete account of a motion event. In a similar vein, Pourcel (2003) found that English users perceive the trajectory of motion rather than MANNER to be the defining feature. It may also be worth pointing out that in V-languages, too, PATH information often exceeds that conveyed by the verb. This is illustrated by Riemer (2010: 402–403), who shows that Spanish does not restrict PATH information to the verb but further qualifies it in the satellite, indicating a general prominence of PATH in linguistic expressions of motion (see Examples 13 and 14 below).

(13) *La botella entró a la cueva (flotando)* 'The bottle moved-in to the cave (floating)'.
(14) *El globo subió por la chimenea (flotando)* 'The balloon moved-up through the chimney (floating)'.

Finally, to put the current debate into perspective, let us consider the criticisms made by Cadiot et al. (2006), who, drawing on data from French, dismissed the idea of using displacement as a principal semantic determinant of motion. The rationale behind their approach is that many of the allegedly typical motion verbs tend to be used in ways that have nothing to do with change of location. A case in point is the expression *la route monte* 'the road goes up', which does not imply any form of movement, or indeed, *la photo est bien sortie* 'the photo came out well, zdjęcie dobrze wyszło', which likewise does not convey a hint of displacement. Moreover, preoccupation with the physical components of motion overshadows the emotional, subjective, and impressionistic dimensions of meaning that are intricately interwoven into semantic networks, and as such reflect the complexity of human experience. Cadiot et al. (2006) argue that by abstracting displacement from a variety of uses of motion verbs, Talmy narrowed down his investigations to just one aspect of their meaning that should not be treated as privileged or

determinative (Riemer 2010). The question that arises from this critique, and indeed from the present discussion, is whether and to what extent a fragmentary portrayal of the semantics of motion can reliably be used as an explanatory basis for research and the ongoing debate on how lexicalization patterns of motion shape, if at all, perception and categorization.

2.2.4. The Whorfian dimension of Thinking for Speaking

Slobin's framework builds on the assumption that the encoding of semantic content is bound to have wide-ranging consequences not only for language production but also for the underlying cognitive processes. Particularly significant in this respect is his observation that during acts of verbalization, language and thought are closely tied together, to the effect that linguistic categories selectively sensitize speakers to aspects of experience that their respective languages encode (Slobin 1996).

The idea that language serves as an attention mechanism and either attracts or decreases the speaker's/hearer's attention by assigning different degrees of salience to particular linguistic entities has also been advanced by Talmy (2008). His views are echoed by Dipper et al. (2005), who go so far as to say that it is linguistic structure that determines which aspects of temporal, relational and perspective information are brought to the foreground, and which ones are backgrounded or entirely stripped away from a sentence. It follows that forms which are more salient linguistically are potentially likely to affect non-linguistic mental imagery and memory, both short- and long-term.

Persuasive as they may seem, not all of these proposals have been empirically confirmed. For instance, some studies have failed to show the relativistic dimension of online verbalization whereby the assumed isomorphy of conceptual and linguistic representations exerts a long-term effect on the conceptual domain. In this vein, based on an oral picture description study, Papafragou et al. (2006) show that in line with typological distinctions, Greeks (V-language) mention MANNER only when it cannot be inferred from the context and when it is crucial to grasping the meaning of the message. The English, by contrast, take no notice of MANNER inferability and specify it regardless of the circumstances. Papafragou et al. (2006) state in conclusion that linguistic forms neither constrain nor faithfully represent non-linguistic representations of motion events, as MANNER information is constantly monitored throughout the process of communication that is by nature both inferential and context-dependent. A potential limitation of the study was that it was based on an integrative language test, and as a result failed to isolate the subcomponents of cognition that might contribute to the emergence of relativistic effects. To address this lacuna, Papafragou et al. (2008) used eye tracking to pinpoint the specific elements of motion events that speakers of Greek and English allocated their attention to during verbal and non-verbal tests.

To date, eye tracking studies of scene apprehension and subsequent verbalization have revealed a robust relationship between word order and eye movement. More precisely, the referent that is fixated during the first 200 ms after image onset stands a good chance of being made the subject of the ensuing sentence. This is because there seems to be a temporary overlap of scene apprehension and the linguistic formulation process, which substantiates claims of online integration of visual-attentive and linguistic-conceptual systems (Gleitman et al. 2007). On a practical level, this finding implies that perceptual salience stands a good chance of being translated into linguistic salience. To this end, the assumption underlying Papafragou's next study was that the allocation of attention to scene components might be affected by those aspects of motion that are typically encoded in the sentential verb in the subjects' L1. Since verbs affect the argument structure of the entire sentence, they play a central role in event perception and description. Of the two languages investigated, Greek, like Spanish, does not allow MANNER verbs to be used in reference to bounded, i.e. telic events (Aske 1989). This is why the stimulus video-clips presented both bounded and unbounded scenarios. The participants were divided into two language groups, and then randomly assigned to do either a verbal description task or a non-verbal memory recognition test (same or different from the source clip). The results of the verbal task confirmed the asymmetries reported in earlier research: speakers of English produced MANNER verbs regardless of scenario type, while their Greek counterparts favoured PATH verbs in referring to bounded scenes. The eye tracking data show similar language-specific patterns of visual preferences in the online linguistic task: the information type conveyed by the verb attracted the most attention. In the non-linguistic telic scenarios where the participants surveyed the clips, both groups preferred the PATH endpoint area. Finally, in the non-linguistic recognition test, the Greeks had the most trouble remembering PATH endpoints. These findings give a consistent picture of the language-cognition interface. Linguistic effects on cognition can be observed in language production tasks. When no linguistic communication is required, event perception remains dissociable from language (cf. Finkbeiner et al. 2002).

Papafragou and colleagues' research is commensurate with the Malt, Sloman and Gennari (2003) study, which also found strong linguistic effects in a language-mediated task, i.e. a similarity task following verbal description, and no significant tendencies in non-verbal recognition tests, especially those that made use of shadowing (cf. Roberson and Hanley 2010). The study additionally found a definite preference for PATH in Spanish linguistic and non-linguistic tests, while the results of the English participants ranged from no clear preference for either PATH or MANNER to a slight preference for same-PATH choices in non-linguistic tests (cf. Gennari et al. 2002). The authors comment that "a small general nonlinguistic preference for same-path choices may have been counteracted by a labeling effect that drew attention more equally toward manner" (Malt, Sloman and Gennari 2003:

101). They also explain that verbal labels affect memory in the sense that they act as effective retrieval clues, thus boosting performance on non-linguistic memory tasks. In this connection, one of the lessons learned from Papafragou and Selimis (2010) is that even subtle linguistic intrusions and/or labels may have a profound impact on categorization, and consequently influence research outcomes. In the study concerned, the authors were forced to limit the instructions for a non-verbal categorization task to just one word *look* to avoid inducing subjects to adopt verbal labels in response to the more elaborate prompt, *Look! The X is doing something! Do you see the X doing the same thing now?* Studies of linguistic priming confirm the strength of this effect during acts of perception (Stapel and Semin 2007).

The slight advantage of PATH over MANNER reported in non-linguistic conditions is congruent with the PATH encoding patterns discussed earlier in this section. However, this issue needs further examination as it is not yet clear whether it is a general cognitive tendency that has found expression in language or a linguistic patterning that has affected cognition. That neither assumption should be uncritically adopted has been made apparent by conflicting research results which reveal a clear preference for MANNER when two or more alternative versions of a motion event are shown simultaneously. Since in the ordinary scheme of things one can see only one sequence of successively unfolding scenarios, this finding suggests that perception and memory for motion may be linked to the visual salience of its elements (Papafragou and Selimis 2010; cf. Gennari et al. 2002).

A related issue which might help explain such inconsistencies in research findings is that a significant MANNER bias has been found in designs using non-human and inanimate FIGURES. In a project aimed at investigating the relation between FIGURE, MANNER and PATH, Pourcel (2009) found clear correlations in the form of a PATH bias for human FIGURES and a MANNER preference evoked by non-human agents. Since many of the studies reviewed by Pourcel (2009) did not control for humanness of the stimuli used, while simultaneously showing a predominance of MANNER choices in non-linguistic memory tests irrespective of language type (e.g. Finkbeiner et al. 2002), she blames the reported variability of findings on a flawed research design. In her own words, "it is important to ascertain whether we are investigating human motion, object motion, animal motion, virtual motion or other, as these appear to determine conceptualization to extents too great to be ignored as superficial" (Pourcel 2009: 381). Pourcel's remarks signal a new direction for explorations in the field by highlighting the necessity to integrate PATH and MANNER with other components of motion, both semantic and grammatical. This should find application in the choice of test stimuli and in a more cautious approach to data evaluation.

2.2.5. Thinking for Speaking effects in gestural communication

Compelling data on the interdependence of the linguistic and conceptual levels have emerged from research into co-speech gestures. These are in essence "movements of the arms and hands that people make to accompany their speech" and that are synchronic with it (Stam 2010: 60). Co-speech gestures have been found to mirror linguistic encoding along the lines of the MANNER/PATH typology. According to Özyürek et al. (2008), iconic gestures, i.e. those that represent the specific components of motion such as MANNER and PATH, reflect the way semantic content is packaged at the clause level in S- and V-languages. Consequently, English speakers use one gesture that conflates MANNER and PATH at points where Turkish and Japanese (V-languages) speakers perform two separate gestures to accommodate MANNER and PATH, respectively. This tendency is also maintained when typologically incongruent patterns are followed, e.g. *He entered the building running*. Also of interest is the fact that bilingual children make more gestures in the language they are more proficient in and that their gestural communication remains language-specific. However, for speakers of S-languages, the shift to conflated gestures may take up to 9 years to accomplish (Özyürek et al. 2008), as the initial tendency is to separate PATH and MANNER.

Even though the Özyürek et al. (2008) study seems to provide hard evidence of how linguistic frames extend beyond the domain of language and constrain nonlinguistic content, Brown and Gullberg (2008) point out that speakers of S-languages gesture about MANNER relatively rarely. They also observe that in English, the choice of gesture may be determined by contextual factors. In Spanish, by contrast, MANNER tends to be profusely expressed in gesture in the form of 'MANNER fog', whenever it is not encoded in the sentence. Such a synchrony indicates that gesture is inseparable from thought, and that together with speech it forms "a single-integrated system in which thought, language and gesture develop over time and influence," or rather, complement each other (Stam 2010: 60). This is yet another reminder that although language constitutes a window onto the conceptual level, it is constrained by its own categories. Consequently, to understand the underlying concepts it is necessary to examine communication in its entirety, taking account of linguistic, pragmatic and non-verbal factors.

Studies of the use of co-speech gestures by second/foreign language learners have yielded evidence of L1 influence on gestural communication which either reflects L1 motion conceptualization patterns or combines L1 and L2 features. The latter tendency was revealed in a decline in PATH gestures for verbs and a simultaneous rise in such gestures for satellites in the L2 English of Spanish speakers. Stam (2010) sees this as proof of gestural interlanguage development. Another of her findings is concerned with the vulnerability of specific motion components to cross-linguistic change. Of the two foundational elements of motion, PATH stands a good chance of becoming native-like in the L2, while MANNER does not seem to change, perhaps on account of its lower cognitive salience (Stam 2010).

When studied on its own, gestural communication retains independence from linguistic patterns. This phenomenon has been addressed by Goldin-Meadow et al. (2008), who set out to establish if word order has an impact on how monolingual speakers of SVO (English, Chinese and Spanish) and SOV (Turkish) languages represent motion events non-verbally by means of gestures. The tests they used included a non-verbal gesture task based on a sequence of vignettes and a transparency ordering test. The results of both tasks point to a tendency to prioritize the actor-patient-act sequence, i.e. the SOV word order, irrespective of the participants' language. As evidence from developing sign languages shows, this word order is preferred over other ordering patterns. The conclusion that emerges from the research is that word order, being a syntactic phenomenon, does not influence non-verbal representations of events, and that there might be a natural conceptual order around which these representations are built. Because none of the stimuli referred to abstract notions, the elicited order may have been determined by the perceptual salience of the concrete and animate nouns that the study used as prompts. Being perceptible, they were less dependent on language for identification (cf. noun acquisition by children, Gentner and Boroditsky 2001). As regards the motion scenarios used in the study, it was noted that the trajectory endpoints were clearly relegated to the periphery, i.e. either to the beginning or to the end of a gesture/transparency sequence. This, in the authors' opinion, shows that of all the motion components under investigation, PATH endpoints are the least salient and are less potent conceptually than FIGURE and MOTION.

Put together, the studies discussed in this section lend support to the Slobinian notion that linguistic form impacts conceptual content communicated online, both verbally and non-verbally. The conceptual domain retains independence from language in tasks that do not require verbalization and engage modalities other than language.

2.2.6. Bilingual research

In its present form, the Thinking for Speaking Hypothesis also offers an explanation for the dynamics of cross-linguistic interaction in SLA and bilingual settings. Seen from the perspective of linguistically constrained attentional and content selection processes, L2 sentence construction appears to be influenced by the L1, which limits the learners' choices primarily to those aspects of meaning that are encoded in L1 lexico-syntactic categories. In referring to these processes, Slobin (1996: 89) aptly observes that the L1 trains its users to "pay different kinds of attention to events and experiences when talking about them," to the extent that children as young as 3 consistently follow language-specific lexicalization patterns (Allen et al. 2007). What is more, such effects are "exceptionally resistant to restructuring in adult second language acquisition" (Slobin 1996: 89). The practical implication is that the L2

learner/user is set to habitually attend to and/or encode L1-based conceptualizations in the L2.

This contention received empirical backing from Harley (1989), who investigated the acquisition of L2 French by native speakers of English in the Canadian immersion context. In consonance with L1 English trends, her subjects used prepositional phrases to provide PATH information, thus exhibiting an L1 interfering influence. Likewise, Cadierno (2004) found that Danish learners of L2 Spanish overused PATH particles, violating the rules of Spanish in the process. Since Danish is a satellite-framed language, the tendency to encode PATH in the prepositional phrase in L2 Spanish is clearly an interfering effect of a typologically different L1. What came as a surprise was that the Danish learners did not attempt to encode MANNER in their L2 (Cadierno 2010). In a reverse scenario involving the learning of L2 Danish by native speakers of German, Russian and Spanish, Cadierno (2010) found strong L1 interference mainly in the verbalizations of Spanish speakers who avoided MANNER verbs in telic situations but encoded PATH in a satellite. In the author's opinion, this was living proof of developing L2-based thinking for speaking patterns which, although clearly different from L2 native speaker behaviour, showed signs of convergence towards its norms. As for the German and Russian participants, they consistently followed the MANNER verb + PATH satellite template and did not seem to be affected by intra-category contrasts in encoding PATH in the satellite, i.e. prefixation vs. prepositional phrases. Accordingly, Cadierno concluded that typological similarities facilitate the acquisition of thinking for speaking patterns (cf. Hasko 2010).

Interestingly but not surprisingly, the processing predominance of the L1 does not make it immune to L2-induced restructuring. Brown and Gullberg (2008) analysed oral depictions of motion events by Japanese-English bilinguals and obtained evidence of bidirectional L1-L2 transfer and convergence. More specifically, the examined bilinguals used more MANNER verbs in their L1 Japanese than Japanese monolinguals but fewer verbs of this type than English-only subjects. In their L2 English, there was less encoding of MANNER than in the monolingual English group. Not surprisingly, gesture use in the group exhibited features of both the L1 and L2. Hohenstein et al. (2006) report parallel tendencies with regard to the use of PATH and MANNER verbs in oral film retellings by Spanish-English bilinguals. Other research has found similar patterns. For example, Polish-French bilinguals tend to use an adjunct to double-code the MANNER of movement, and hence violate logicality constraints in L1 Polish, as shown in Example 15:

(15) **Doszedł do nas biegając* 'He walked up to us running'. (Sikora 2007)

One exception to this trend has been oral film retellings collected from late Russian-English bilinguals by Pavlenko (2010), who shows that the L1 Russian motion lexicon is relatively resistant to cross-linguistic influence, and that of all the

syntactic markers of motion, PATH prefixation is the most stable. The few instances of L2-induced changes that Pavlenko found in her dataset included a preference for imperfective verbs and loss of a semantic distinction between walking, riding and driving, which manifested itself as the use of *idti*/*walk*, most likely by analogy to the English *go*.

Another issue of interest, particularly in SLA contexts, is the semantic exponents of motion that L2 learners choose to lexicalize. Working along these lines, Cadierno and Lund (2004) hypothesized that when learning an S-language speakers of V-languages will avoid less frequent MANNER verbs, especially in referring to boundary-crossing situations, and will express MANNER in a separate unit. By contrast, S-language users will add MANNER information to sentences in a V-language and will fail to distinguish between boundary-crossing and non-boundary-crossing scenarios. A subsequent study, however, found that MANNER was less likely to be encoded in an L2 V-language, e.g. Spanish, regardless of whether the L1 was an S- or V-language, probably on account of its lower cognitive weight (Cadierno and Ruiz 2006). Cadierno and Lund (2004) warn, however, that linguistic choices will to some extent be linked to proficiency in a particular language.

Finally, an issue well worth looking into is how speakers of a Slavic S-language, e.g. Polish, go about expressing directed motion in L2 English, also an S-language. Keeping in mind the differences in the way both encode PATH, it is possible to form a number of hypotheses about the possible lexicalization patterns in L2 English. These run as follows:

a. Given the tendency of Polish to lexicalize PATH throughout the predicate, Polish users of L2 English will prioritize PATH at the expense of MANNER verbs. This will manifest itself as a preference for PATH-only verbs, a tendency reinforced by their frequent usage in English. In fact, The Oxford 3,000 Wordlist (www.oup.com) features most of the English PATH-only words, as listed by Talmy (1985).[8]

b. Since MANNER verbs, especially those conveying finer distinctions, are less common, they are also less likely to be acquired (Cadierno and Lund 2004) and/or used productively by L2 learners. Consequently, the learners will rely on the most frequent stock of MANNER vocabulary and, if necessary, will attempt to express MANNER by resorting to other linguistic devices, such as adverbials. It is also possible that MANNER information will be avoided altogether.

c. Since Polish users of L2 English expect the verb to express at least some PATH information, they will initially use deictic English verbs, such as *come* and *go.* This is because their semantic composition is broad enough to accommodate the nuanced meanings of Polish spatial prefixes. There will be less pressure to encode spatial information in the prepositional phrase, by analogy to L1 Polish. As a result, Polish-English bilinguals will produce less elaborate and shorter PATH prepositional phrases in L2 English.

[8] Exceptions include: *ascend*, *descend*, *cross* (v), *circle* (v), *depart*, *part* (v), and *near* (v).

Despite their intuitive appeal, these hypotheses only intimate possible linguistic behaviour and should not be interpreted as descriptions of definitive trends. Indeed, with the benefit of hindsight, it seems more practical to adopt a data-driven approach to explicating these issues, rather than fall into the trap of overprediction which for years blighted theory-oriented research into cross-linguistic influence.

On the linguistic relativity front, the research discussed in this section supports the idea that verbalization is instrumental in directing the speaker's attention to categories that are encoded in the speaker's language(s). Still, the cognitive and linguistic prominence of these categories, as well as the extent of their impact on non-linguistic cognition are open to discussion, and should be subject to further scrutiny. As it stands, however, the Thinking for Speaking Hypothesis retains its relativistic dimension, albeit in a weaker form, because the evidence collected to date clearly confirms that language exerts an influence on the cognitive domain prior to and during production.

Notwithstanding the significance of the above conclusion, it is vital to remember that language pervades human communication, consistently creeping into the imperceptible domain of inner speech. For this reason, claims of an absolute dissociation between language and conceptual representations need to be kept in perspective. After all, a dominant part of human experience is mediated through language, which is bound to have an impact on what is stored in memory and how. On the other hand, language, being a tool for communication, naturally expresses at least some of the information stored at the conceptual level. Linguistic representations, however diverse, show surprising uniformity in how they present events such as, e.g. breaking and cutting (Majid, Boster and Bowerman 2008) or walking and running (Malt et al. 2008), lending support to claims of conceptual similarity that is reflected linguistically. Furthermore, visual attention has been found capable of determining sentence structure since what is spotted first tends to be the subject of the sentence. At the same time, sentence structure is subject to universal cognitive constraints because "creatures higher in the animacy hierarchy tend to be in Subject position" (Gleitman et al. 2007: 545), while depictions of motion make the agent the Subject and place the patient in Object position. Arguments such as these emphasize the interdependence of language and cognition and remind us that language is one of many systems nested within the broader and more diverse network of the human mind.

As for the Thinking for Speaking Hypothesis, Slobin (2005: 1) regards it as an endeavour to deal with both ends of the language-concept equation: "[…] construals of linguistic forms [lexicalization patterns and discourse] and construals of non-linguistic experiences" that are investigated through the lens of language. From the perspective of research into the linguistic relativity hypothesis, such logic gives cause for concern on methodological grounds. Namely, there appears to be by now an established practice of identifying conceptual thinking-for-speaking effects by marshalling evidence of a linguistic nature (cf. Odlin 2010). A case in

point is a recent volume by Han and Cadierno (2010), in which only one paper reports on research that probes non-linguistic aspects of motion. As shown by this same volume, in Spanish profuse use of non-linguistic information in the form of MANNER gestures supplies content that is formally absent from language. It may indeed be a form of linguistic relativity whereby linguistic resources determine what is expressed verbally, non-verbally, and not communicated at all. However, researchers will fail to understand the nature of such interactions if they persist in ignoring the non-linguistic domain.

Regardless of these reservations and in a broader historical perspective, there can be no doubt that Slobin's approach bridges the gap between traditions emphasizing the importance of non-verbal paradigms in research into linguistic relativity and laboratory designs probing isolated words and/or phrases outside their communicative context.

2.3. Conceptualization via event construal: The von Stutterheim paradigm

A complementary perspective on Thinking for Speaking can be derived from research by Christiane von Stutterheim of the University of Heidelberg, who analysed conceptualization by looking into oral descriptions of filmed events reported online. The prediction she sought to test was that grammaticized categories, such as aspect are the driving force behind the process of selecting and structuring content for expression. This is because grammar conveys meanings which are highly automatized, and hence offer a more powerful blueprint for the structuring of utterances according to language-specific patterns of information structure than lexical categories (Carroll et al. 2004; Carroll and von Stutterheim 2002; Schmiedtová et al. 2011; von Stutterheim et al. 2009; von Stutterheim and Nüse 2003).

Unlike Slobin, the von Stutterheim team did not focus on the encoding of a specific semantic field, such as directed motion, but instead chose to adopt a much broader and inclusive notion, that of an event. It tends to be defined as (a segment in) a conceptual representation of a situation unfolding at a specific point in time and space, and thus involving change (Bylund 2009, 2011a). To prevent cultural and contextual factors from interfering with linguistic phenomena, they examined culturally diverse languages, e.g. English and Arabic. Both these languages use grammaticized imperfective and progressive aspect for conveying the idea of ongoingness. Languages linked to similar cultures, e.g. English and German, were also investigated. Of the two, German does not use aspect to communicate ongoing situations. Since aspect relates to the temporal dimension of events, which can only be cognized via language, and as such has no directly observable referents, the relation between the concept and its linguistic form is of relevance to the debate on language-mediated cognition (Carroll et al. 2004).

2.3.1. Processes of conceptualization

A theoretical point of departure for von Stutterheim's team's investigations was Levelt's model for language production (Levelt 1989, 1999; Levelt et al. 1999), commonly referred to as the *Blueprint for the Speaker*. The model encompasses three separate modules whose interactions constitute the conceptual and execution bases for language production. These are the conceptualizer, the formulator and the articulator. Each of the three modules specializes in processing a specific type of input. One of the functions of the conceptualizer is to convert non-linguistic multimodal representations of experience into a propositional conceptual format which can be contained by linguistic means at the level of language. This format is referred to as the preverbal message (Levelt 1989) or temporary conceptual structure (Carroll and von Stutterheim 2002) and represents the content to be verbalized. The transformation processes involved bear the name of conceptualization. The preverbal message is transferred to the formulator where language-specific encoding is implemented at the levels of the lemma and the lexeme. At the lemma level, word meanings and their syntactic properties are retrieved from memory.[9] The lexeme level activates the words' morphological forms (Roelofs et al. 1998). The product of the formulation process enters the articulator, where the message is encoded into a phonetic format (Habel and Tappe 1999). The model assumes that processing is incremental; that is, once part of a preverbal message enters the formulator, the conceptualizer starts processing the next piece. In the words of Kormos (2006: 8), this results in "the articulation of a sentence […] long before the speaker has completed the planning of the whole of the message."

Inspired by Habel and Tappe (1999), von Stutterheim and Nüse (2003) consider conceptualization to be the province of the conceptualizer and partition it into a sequence of stages, the first of which is the segmentation of conceptual content into demarcated units such as states and events (Nüse 2003). The amount of conceptual detail called upon for verbalization determines the message's level of granularity. The second stage, selection, involves choosing specific conceptual components for verbalization, such as endpoints[10] of motion trajectories, entities, times, spaces and properties (Bylund 2011a). Next, structuring, a perspective-driven process, consists in anchoring the message within a specific referential frame, e.g. the observer or coinciding subevents, for the purpose of creating the event's timeline. This is an abstract sequence of temporal intervals that could

[9] In the 1999 version of the blueprint, lemmas do not carry semantic information because the mental lexicon, being one of the available knowledge stores, contains a separate conceptual level which holds semantic attributes. The processing taking place during the conceptual preparation of a message remains the same as in the 1989 model.

[10] Bylund (2009) defines endpoints as locative phrases referring to the arrival at or intention to arrive at a goal, as in *to go to school* or *to walk towards a building*. Schmiedtová and Flecken (2008) call endpoints right boundaries. Their conceptual referents are the GOALS of motion.

encompass a number of simultaneous events within the same interval, as in *a woman is riding a bike and looking at the landscape*, or a sequence of events, each occurring in a subsequent interval. An example of the latter is *a woman is riding a bike and looking at the landscape; then she hits a bump in the road and falls over* (Bylund 2011a: 111). As indicated by the anaphoric adverbial *then* and change of tense/aspect, the last two events occur in two consecutive intervals. In addition, structuring involves casting the selected content into linguistic frames according to the predicate type, argument structure, thematic roles and topic assignment. Finally, the linearization of the preverbal message, albeit non-linguistic in nature, allows a smooth transition into the medium of language as it involves content ordering. The four stages are imbedded in two distinct planes of conceptualization, i.e. macroplanning and microplanning; the former determines what to verbalize, while the latter shapes the form of verbalization. Both levels are part of the conceptualizer and seem to show linguistic effects (Bylund 2011a; Jarvis 2007; von Stutterheim and Nüse 2003).[11] In fact, these can be found as early as the segmentation stage, and filter into the subsequent phases. Considering the speed at which the conceptualizer makes choices of conceptual content, it is assumed that its operational principles are stored in long-term declarative memory (Flecken 2010; Kormos 2006).

With regard to segmentation, von Stutterheim and Nüse (2003) established that German and English speakers' accounts of filmed motion events, i.e. film retellings, differ in terms of the amount of detail they convey. More precisely, English users mention more events, while the Germans summarize the story, omitting finer episodes that are often verbalized in English. Parallel differences have been found between Swedish and Spanish, with the latter demonstrating a preference for fine-grained narration (Bylund 2011b).

At the selection level, German descriptions of events tend to contain elements signifying closure, i.e. an endpoint or result, while the English ones contain a verb implying an open-ended activity, as exemplified by *Two nuns are walking down a road*, compared to the German *Two nuns walk along a lane toward a house* (Odlin 2005: 13). The endpoint in the German descriptions can be real or imagined. The English do not mention endpoints that have not been reached. The differences between the two languages are so pronounced that if, in describing an event without a visible right boundary, 90% of German speakers mentioned the endpoint, only 50% of English speakers would have done so (von Stutterheim and Nüse 2003). In interpreting these differences, von Stutterheim and Nüse (2003) observe that English decomposes events into phases, thus implementing phasal decomposition, and focuses on the phase that is in progress at the time of speaking. As a result, it highlights the activity's ongoingness. In contrast, German adopts a holistic approach and portrays events as bounded wholes or episodes with boundaries.

[11] Levelt (1989) restricted linguistic influence to microplanning.

The structuring process is perspective-driven. That is, German adopts an event-based perspective where events and subevents are linked to each other in a seemingly chronological order and serve as internal anchor points for the unfolding temporal line. This is best illustrated by the following translation into English: *and tries to dig himself out/which he doesn't succeed in doing/and is then swallowed up by the funnel* (von Stutterheim and Nüse 2003: 867), which adheres to the formula: *event X was completed before event Y started* (Carroll et al. 2004). Such sequential structuring results from the use of an anaphoric linking strategy whereby the time of the event is established through reference to the preceding (bounded) event by means of temporal anaphoric adverbials. English in turn uses a speaker-oriented external perspective where events are decomposed into fine-grained open-ended episodes and are mentioned one by one without reference to temporal relations between them, e.g. *he's on his knees/and he's starting to dig/ and starts digging faster and faster…* (von Stutterheim and Nüse 2003: 868). These relations have to be inferred from context or remain unspecified. The English type of perspectivation emphasizes the duration of the constituent episodes, each of which is linked to the deictic *now* (von Stutterheim and Nüse 2003: 869).

Having reviewed the evidence, von Sutterheim hypothesized that at the heart of these contrasts was the category of grammatical aspect rather than tense, and that it was grammaticalized aspect that had the potential to induce specific patterns of conceptualization. Her predictions have been borne out by numerous studies, several of which are referred to in this section. Generally, the studies established that languages marking the verb for the progressive/imperfective aspect, and thus implementing phasal decomposition of events (Algerian Arabic, English, Italian, Russian, Spanish), do not frequently verbalize endpoints and/or results. They focus on the medial phase of the situation that is viewed from the inside. Such a perspective stresses ongoingness. Speakers of languages that lack grammaticalized means for expressing such a dimension, i.e. French, Swedish, Norwegian, Dutch, and German,[12] treat events as single entities in time. Accordingly, they encode endpoints and/or results, as well as taking an event-based temporal perspective (Bylund 2009).

The legitimacy of the above formula was additionally tested through non-verbal designs to gauge the extent to which linguistic patterns influence non-linguistic attentional processes preceding speech. Thus, in a speech onset study, Carroll et al. (2004) hypothesized that speakers of German would need more time to conceptualize and verbalize events than speakers of English because English does not need to encode endpoints. In line with these predictions, the German subjects started speaking 4.54s after stimulus onset, i.e. the start of the video

[12] Despite its typological allegiance to Germanic languages, Dutch may behave like English in its rendition of ongoingness. This is because it contains a structure that is evolving into a grammaticized progressive aspectual marker. Consequently, Dutch speakers show inconsistency in encoding endpoints, depending on whether or not they adopt an aspectual perspective when describing events (Carroll et al. 2004; Flecken 2010; von Stutterheim et al. 2009).

clip, while their English counterparts needed only 3.51s to conceptualize the plot. The result was statistically significant and confirmed that Germans prefer to take a holistic perspective on events. In practice, this makes them wait until the end of the scene before starting to speak (von Stutterheim et al. 2009). Likewise, eye-tracking research with German, Dutch and English speakers shows marked differences between the German and English participants as regards the number of looks to the endpoint area before speech onset. The Dutch come in between the English low and German high reference values. What comes as a surprise is the minimal difference between English and German speakers after speech onset, with the average number of fixations ranging from 8.5 for English to 9.5 for German. Von Stutterheim et al. (2009) explain this result in terms of phasal decomposition. That is, even though the English do not look for endpoints from the outset, as they move from one phase to another they begin to visually control for a potential boundary. This is congruent with English lexicalization patterns, which allow the inclusion of a terminative phase in a sentence under construction. Put together, the authors argue, these results constitute hard evidence of linguistic influence on pre-speech conceptualization. Earlier studies ruled out the possibility that the observed effects could be accounted for in terms of cultural differences or task instructions using the progressive, i.e. "what is happening in the video" as opposed to "what happens" (von Stutterheim and Nüse 2003; cf. Carroll et al. 2004; Papafragou et al. 2006). Moreover, the obtained findings have become the basis for the Seeing for Speaking Hypothesis, whose main tenet is that "when language A codes a certain meaning grammatically and language B codes the same meaning lexically or by phrasal means, then speakers of language A should attend to the relevant feature of a given visual scene, when the associated concept is relevant for the context in question, while speakers of language B may not do so, or at least not to the same extent" (Schmiedtova et al. 2011: 67). This formula extends the scope of pre-speech conceptualization to co-existent perceptual processes.

More support for von Stutterheim's position comes from a study by Flecken (2010), who investigated oral descriptions of bounded and unbounded motion events, along with memory for PATH endpoints and eye movement patterns in speakers of MS Arabic, English, Russian, Czech, Spanish, Dutch and German. Of the languages under investigation, only German did not encode aspect morphologically on the verb. Flecken expected to find differences in the encoding of trajectory endpoints in cases where the endpoint was clearly shown in the video clip but was not reached by FIGURE, i.e. during the intermediate stage of the event. She did not predict cross-linguistic differences for clips showing the terminative phase culminating in the FIGURE reaching the GOAL. These predictions were borne out in the verbalization test, where Arabic, English, Spanish and Russian clearly diverged from German, Czech and Dutch in terms of not mentioning endpoints that were not reached. As expected, no differences were reported for culminated events. Quite surprising was the fact that Czech, an aspect language, showed the highest predilection for

the right boundary of all the language groups. Finally, the tendencies reported for the verbal task were confirmed by eye tracking and a non-verbal memory test for endpoints. Conducted after the linguistic session, the tests revealed that individuals who were prompted by language to look at and talk about the right boundary tended to remember it better. The reverse was also the case (Flecken 2010).

Still, caution is needed in generalizing these patterns of event construal to all forms of linguistic output, as two studies by Nüse (2003) narrow the scope of these effects to online processing of unfolding event sequences. The first study concerned itself with event segmentation in the non-verbal domain. Using the same films as the von Stutterheim team, Nüse (2003) asked native speakers of English and German to press a button when they thought a particular event was over. The results did not reveal any statistically significant differences between the two language groups. Interestingly, the number of events identified by the subjects was markedly lower than in the verbal task, indicating that linguistic segmentation does not extend to the nonverbal domain. The second study makes this clearer by showing that when the viewing perspective was changed to perfective, i.e. the stimulus question was framed in the simple past tense, e.g. *What did the protagonist do before he did X?*, speakers of English and German did not produce different replies or indeed differ in the amount of detail they mentioned. Nüse (2003) interprets these findings as being indicative of the cognitive significance of the grammaticalized concept of ongoingness whose presence or absence brings about cognitive consequences such as, for instance, greater granularity of description.

In the light of the discussion presented in this section, conceptualization, as defined by the von Stutterheim approach, functions as an interface between language and conceptual representations, and as such may serve as a source of insight into the interactions between the two levels. Further, it is the domain of the conceptualizer since the principles of information structure the von Stutterheim team speak of do not belong in the realm of grammar or lexis, despite being language-specific and despite being acquired together with the L1. It follows that the preverbal message that the conceptualizer constructs must be linguistically constrained. Differences in conceptualization patterns are induced by the grammatical category of progressive and imperfective aspect. Bylund (2009) and Flecken (2010) explain that at the heart of this process is the codability of the progressive and/or imperfective, i.e. the ease and frequency of expression of ongoingness and/or open-endedness, and not the mere possibility to express the concepts, e.g. lexically. Finally, Carroll et al. (2004) note that even though speakers of particular languages show preferences for one pattern of conceptualization over another, this does not imply a deterministic tendency since some individuals may choose other options. Statistically, they are in the minority, however.

2.3.2. Evidence from Slavic languages

The role of imperfective aspect in inducing unbounded event frames in Slavic languages has been assessed on the basis of Czech and Russian by Schmiedtová and Flecken (2008) and Schmiedtová et al. (2011). Both languages encode two contrasting categories of grammatical aspect: the perfective and imperfective. Perfectivity is marked by means of a prefix attached to the verb stem. As well as causing aspectual changes, the operation induces a change in the word's semantics (Russian: *pisat* – ***vy***-*pisat*). By contrast, the addition of a suffix to a perfective form, as in Czech *vypsat* 'to write out' – *vypis-**ova**(-t)* 'to be writing out,' affects the verb's grammatical aspect only by making the verb imperfective. The resultant construction is called the secondary imperfective. Despite these similarities, native speakers of both languages show markedly different preferences for the encoding of endpoints and results. These become most apparent in responses to visual stimuli where the endpoint cannot be seen and needs to be inferred. It turns out that in such scenarios native speakers of Czech mention endpoints three times as often as the Russians. Czechs also use the prefixed perfective form with a present reading in places where Russian speakers show a clear preference for the secondary imperfective. According to Flecken (2010: 110–111), the highly idiosyncratic tendency of Czech to give preference to perfective forms and consequently encode the right boundary is the result of contact with German. More precisely, the combination of the perfective and the present tense, i.e. the present perfective, allows for the inclusion of endpoints under the deictic *now*, as in the sentence *Holka vypije celou sklenici* 'A girl drinks up a whole glass'.

In Polish, as in Czech and Russian, most verbs have two forms: perfective and imperfective. Generally, the imperfective aspect refers to incomplete situations that are in progress at a specific point in time or occur more than once over a time span and are therefore habitual and iterative. As regards phasal decomposition, the imperfective aspect does not provide information on that score, as opposed to perfective forms which, due to prefixation, are able to mark the initial (*zakochać się* 'fall in love') and terminative (*dopić* 'drink up') phases of an action. Perfectivizing prefixes (Nagórko 1998) are also capable of changing the verb's meaning, e.g. *być* – ***po***-*być* 'to be' – 'to stay for a while'. By definition, the perfective aspect denotes termination, completion, and singularity of the event in question (Fisiak et al. 1978; Nagórko 1998).[13] These traditional functions are called into question by Laskowski (1998), who sees change of state culminating in the emergence of a new situation as the defining feature of perfective aspect. He also stresses that in Polish, grammatical aspect and lexical aspect (Aktionsart) are closely related, to the extent that it is Aktionsart that determines a verb's aspectual status. Fisiak et al. (1978: 114) give the

[13] The only perfectivizing suffix in Polish is -ną-, as in *kichać* vs. *kichnąć* 'to sneeze vs. to have sneezed'.

following examples of how Aktionsart and grammatical aspect complement each other in Polish:

a. For telic verbs, the contrast between imperfective and perfective forms is an opposition between a goal-oriented action and an action that has reached that goal, e.g. *pisać–napisać* 'to write' – 'to write up'. In other words, imperfective forms focus attention on the action itself and implicate its endpoint/result. Perfective forms emphasize the endpoint and demote the action, often considered to be the cause of the result (Laskowski 1998).

b. For atelic verbs, the contrast between imperfective and perfective forms is an opposition between an event that is durative or iterative, and an event that is punctual, e.g. *krzyczeć–krzyknąć* 'to shout' – 'to give a shout'. In Laskowski's (1998: 164) opinion, in the case of atelic verbs, perfective forms do not convey any information about the action leading up to the result which is expressed as a punctual event involving a change of state, e.g. *Jan zamieszkał w Krakowie* 'Jan has moved to Kraków and now lives there'.

The punctual/iterative contrast may also be conveyed by alternative imperfective forms of the same verb, which has an iterative meaning e.g. *iść→chodzić* 'to walk', *spać→sypiać* 'to sleep', and *jechać→jeździć* 'to go', and by the secondary imperfective. Similarly to Czech, it is in most cases formed with the suffix *-ywa-*, as in *pisać-pisywać* 'to write', as well as *-wa-* and *-ewa-*, as in *bywać* 'to visit regularly' and *omdlewać* 'to pass out', respectively. Durative meaning may also be induced by a combination of an adverb and the perfective aspect, e.g. *Tydzień przeleżał w łóżku* 'He was in bed the whole week'. Most simple Polish verbs are imperfective and are usually unprefixed in opposition to perfective forms. Nagórko (1998) is of the opinion that all perfective prefixes give the verb a perfective reading. The perfective aspect generally does not occur in the present tense.

Of particular relevance to this discussion is the question of how native speakers of Polish construe events, and whether their aspectual preferences trigger off phasal decomposition and endpoint encoding to the extent exhibited by von Stutterheim's dataset. At this stage, however, we are not aware of research in this area. However, since Polish has one aspectual opposition, perfective and imperfective, it is plausible to assume that like Algerian Arabic, it follows the conceptualization patterns exhibited by aspect languages. Algerian Arabic also has the perfective-imperfective opposition and does not encode ongoingness in the verb. According to von Stutterheim and Nüse (2003), the latter is not a necessary condition because event construal is determined by specific viewing perspectives that are morphologically encoded in the verb. Their research does not envisage the possibility that typologically related languages with identical aspectual configurations may show divergent encoding preferences. This makes the Czech data difficult to account for in terms of the theory. On a practical level, Polish should show a preference for scarce endpoint encoding by analogy to Russian (Schmiedtová and Flecken 2008; von Stutterheim and Nüse 2003). On the other hand, the analysis of Polish verbs of directed motion indicates

a strong focus on PATH and the right boundary (Krucka 2006; Laskowski 1998). This means that the possibility of frequent endpoint encoding in Polish should not be dismissed out of hand.

Putting together the findings of the studies presented thus far, it is possible to draw tentative conclusions about the role of grammatical aspect in the linguistic and conceptual construal of events. As the Schmiedtová and Flecken (2008) study shows, the tendency to encode endpoints cannot be ascribed solely to languages that lack grammatical aspect altogether since the usage of endpoints can also be linked to a preference for the perfective, as is the case with Czech. The progressive and imperfective, by contrast, do not require closure since they do not encompass endpoints conceptually. The picture becomes somewhat fuzzy when one considers that languages like English and Polish tend to have two aspect categories, the progressive (imperfective) and perfect(ive), each of which seems to have a different cognitive weight. Von Stutterheim and Nüse (2003) explain that the key to this conundrum lies in the acquisition order of L1 morphemes, where the *-ing* ending is the first to be acquired. Since the meaning it conveys is linked to the deictic *here* and *now*, the English child is sensitized to the concept of ongoingness early in the learning process. The attention of a German child is directed to the past participle with a resultative reading. It automatically implies an endpoint and results in the choice of a holistic event-related perspective for event construal. Such imprinting appears powerful enough to counteract the influence of forms acquired later. For the sake of clarity, it is important to add that Polish children acquire the perfective quickly and with ease. Studies of L1 Polish acquisition show the age of 3 to be the final acquisition point for the perfective, while the imperfective causes interpretation problems up to the age of 5 (van Hout 2005). All this makes the possibility of endpoint encoding in Polish very real.

2.3.3. Conceptualization in bilinguals and second/foreign language learners

Applied to the study of bilingualism in natural and advanced foreign language contexts (Carroll and von Stutterheim 2002), the paradigm has been a springboard for explorations into how the coupling of typologically different languages impinges on conceptualization patterns. In the realm of endpoint encoding, von Stutterheim (2003) found significant differences between L1 English and L1 German speakers, but not between L1 English and L2 English users. A difference was also found between L1 German speakers and L2 German learners. Because similar results were obtained from a speech onset study, they were taken to imply a gradual shift from L1 German conceptualization patterns towards those of L2 English, but not the other way round. In a later study (von Stutterheim and Carroll 2006), the German learners of L2 English did not reach monolingual English norms, however. The data for Russian and Czech learners of L2 German showed strong reliance on

L1-based conceptualization, regardless of the L1's preferred pattern. This, in the authors' opinion, shows that "verbalization is affected not only by the availability of a particular [linguistic] feature but also by preferences in usage" (Schmiedtová et al. 2011: 95).

One of the few studies conducted outside the Heidelberg circle is that by Bylund (2009), who examined Spanish and Swedish. The languages differ not only in terms of grammatical aspect but also with regard to MANNER and PATH encoding (Slobin 2005). More precisely, Swedish lacks grammatical aspect altogether, while Spanish distinguishes between the progressive, i.e. *Rocinante esta trotando* 'Rocinante is trotting' and non-progressive, as in *Rocinante trota* 'Rocinante trots' (Bylund 2009: 308). Consequently and consistent with previous research, Swedish speakers verbalize endpoints more often than their Spanish counterparts. Also, Swedes segment events into bounded entities, while Spaniards produce fine-grained event descriptions which are unbounded. The inclusion in the study of Spanish/Swedish bilinguals who were Swedish residents and who acquired their L2 before age 9 and were thus Swedish-dominant, sheds light on how conceptualization patterns in a possibly attriting system are transformed in accordance with those of the dominant language. In the study, bilinguals with an early age of L2 Swedish acquisition were more likely to encode endpoints for GOAL-oriented motion events in L1 Spanish, at times giving way to ungrammatical PATH expressions: *saltando para abajo a una colchoneta* 'jumping down(wards) onto a mattress' (Bylund 2009: 314). They also showed a preference for the simple present tense and holistic event-based perspective, in unison with Swedish verbalization patterns. Additional data on the score were obtained by Bylund and Jarvis (2011), who found through an auditory metalinguistic judgment test that the bilinguals who were less sensitive to incorrect use of morphological markers of the progressive aspect in L1 Spanish, were also more likely to mention endpoints. The second variable they investigated was the age of L2 acquisition. It was found to be negatively correlated with endpoint encoding in L2 Swedish ($r = -0.39$, $p < 0.05$), and as such highlighted the role of maturational factors in the acquisition of L2 encoding preferences. The length of residence in the L2 country did not yield significant results. The project did not use non-linguistic tests.

To digress for a moment, it seems worth pointing out that perhaps the most promising feature of this line of research is the integration of aspectual/temporal and directed motion data, and the resultant characterization of conceptualization in its entirety. Even though the research did not explore linguistic relativity, the findings it produced allow researchers to draw inferences about the cognitive weight of specific encoding options and their likely impact on both short- and long-term memory. Accordingly, an avenue worth exploring is whether aspect has any bearing on the encoding of MANNER and PATH information in utterances referring to directed motion. In the light of the available evidence, it seems plausible that, at least in the case of goal-oriented scenarios, the perfective aspect will prioritize PATH

over MANNER, making the former more cognitively salient. This in practice means that, motivated by the holistic perspective imposed by the perfective aspect, individuals may be more likely to remember the goal that was reached rather than the way that was implemented. In fact, this prediction stands a good chance of being confirmed because research shows that in general, preferential attention is given to GOAL rather than SOURCE of motion in both verbal and non-linguistic memory tests (Trueswell and Papafragou 2010). The subsequent challenge facing researchers is to create designs that separate general cognitive preferences from those induced by language.

The obtained evidence points to the conceptual prominence of the dominant/native language which may lead L2 users to choose a temporal perspective in accordance with L1 perspectivation patterns. This often results in an inconsistent structuring of information, as an event-based perspective may become intermingled with an external time frame due to the choice of inappropriate temporal categories. While the effects of taking the wrong perspective can only be observed at the local microplanning level, the overall impression they create is that of unnatural, if not foreign, style. Noyau et al. (2005) term it a *foreign discourse accent*. Accordingly, the challenge foreign language learners face involves not only learning new structures and meanings but also learning to recognize how these influence patterns of discourse structure. Since most of these processes remain under a strong L1 influence, they are open to cross-linguistic transfer even at the most advanced levels of L2 proficiency, making the prospect of achieving native-like competence in the L2 fairly remote.

As regards L2 teaching, there can be no doubt that the conceptualization model proposed by the von Stutterheim team has important implications for syllabus design. That is, in addition to established teaching content, materials developers should direct their attention towards discourse structuring patterns, such as granularity levels and patterns of perspectivation. Awareness of these factors may also come in handy in translation research, since without considering cross-linguistic differences at the structuring and segmentation levels, it may be virtually impossible to establish degrees of semantic equivalence between languages whilst simultaneously maintaining monolingual standards.

To summarize, the incorporation of grammatical aspect into the study of event conceptualization has shed light on how a language-induced viewing perspective influences the format of utterances at the verbal and pre-verbal levels. Because the structuring principles involved, which von Stutterheim calls principles of information organization, are highly abstract and do not belong in the semantic domain, they are assumed to be inherent in the conceptual representations developed for discourse. Consequently, discourse architecture has become a source of insight into content structuring processes prior to verbalization. Support for the involvement of the non-verbal domain has been provided by eye tracking and speech onset time data. To increase the accuracy of findings, the scope of the investigation has been limited to

a fraction of the temporal frame where these processes may be easily observed, i.e. the progressive aspect and online reports.

2.4. Linguistic relativity: General perspective

Scientific research into the linguistic relativity hypothesis predates Whorf and can be traced back to the 1880s when Magnus (1880) empirically established that linguistic differences in colour naming did not correspond to perceptual contrasts (Carlson et al. 2004). While the contribution of the Magnus and other early studies is widely acknowledged, the present chapter purposely presents an overview of selected work which, in many cases, is also the most recent. This is because only the most recent studies availed themselves of the most advanced research technologies to date, and thus were conducted with great empirical precision and in conformity with current theories of language and mind. Table 2 shows a summary of major findings in the field. Some of them come from authors who carried out a series of investigations over a span of several years. Consequently, many of the subsequent studies are improvements on and extensions of previous work, and as such clarify issues that were for some reason overlooked in earlier projects.

As can be seen from Table 2, linguistic influence has been detected mainly in processes to do with the allocation of attention in verbal and non-verbal tasks and the subsequent recall of event components, categorization of experiential input, and in cognitive functions associated with abstract thought. As regards categorization, Evans (2009b) sees it as involving three distinct processes:

1. Sensation, i.e. the conversion of external energy such as heat or light into neural codes recognizable to the brain.

2. Perceptual organization, i.e. the integration of sensory codes into perceptual objects called percepts.

3. Identification and recognition, i.e. interpreting the percept against past experiences and conceptual knowledge. This is when previously acquired concepts are used to categorize the percept.

Evans further explains that percepts constitute a separate level of representation in the sense that they arise from multi-modal online processing that is available to consciousness and remains contextually bound. Concepts, by contrast, do not refer to a specific experience but are formed as a result of generalization that binds together information derived from all of the encounters with exemplars of a specific category. Concepts are stored in memory and can be recalled in the absence of related percepts. The available evidence, especially that coming from neurolinguistic investigations (Athanasopoulos et al. 2010) and emotion research (Gendron et al. 2012), suggests that language has the potential to influence the perceptual stages of visual processing. The final phase, i.e. categorization, impinges on conceptual representations proper and appears permeable to language-based patterns, too.

Table 2. Linguistic relativity research findings

Domain	Author	Languages and areas addressed	Research procedure	Results
Monolinguals				
1	2	3	4	5
Colour	Roberson, Davies and Davidoff (2000)	Berinmo, Melanesia: five basic colour terms; English: eleven focal colours	Colour naming, best example of colour, colour memory (select the colour you have just seen), Munsell colour chips	Memory task: Berinmo speakers perform less accurately than the English; colour recognition dependent on naming patterns
	Roberson, Shapiro, Davies and Davidoff (2005)	Himba, Namibia: five basic colour terms; English: eleven focal colours	Colour naming, best example of colour, colour memory (select the colour you have just seen), non-verbal similarity judgments for stimuli triads, Munsell colour chips	Memory patterns similar to patterns of naming; colours judged to be similar if they come from the same verbal category; categorical perception is language-specific
	Roberson, Pak and Hanley (2008)	English, Korean: contrast between yellow-green and green	Colour naming and sorting, non-verbal computerized visual search for colour boundary in culturally similar settings	Categorical perception is implemented along the lines of linguistic categories and is mediated by the left hemisphere
	Winawer et al. (2007)	English: blue; Russian: light blue (*goluboy*) and dark blue (*sinyi*)	Non-verbal triads matching task, verbal and visual interference, reaction times	Colour categorization determined by linguistic categories; Russians are faster at discriminating colours from different categories; these effects disappear under verbal but not spatial interference
Space	Pederson et al. (1998); Levinson (1997, 2003a, 2003b); Majid et al. (2004)	Dutch and Japanese: relative and intrinsic spatial coordinates; Tzeltal (Maya) and Arrernte (Australia): absolute orientation	Rotation tasks: non-verbal object rearrangement tasks, finding way through a maze	Spatial reasoning mirrors linguistic coding

Table 2 continued

1	2	3	4	5
Number/ substance	Lucy (1992b)	American English: number marking for most animate and count. entities; Maya: lack of number marking for all inanimate entities	Picture matching in terms of similarity	English speakers show greater sensitivity to number; Yukatec speakers attend to number only when dealing with animate entities
	Lucy and Gaskins (2003)	American English, Yukatec Maya	Triads matching test focusing on same shape or substance	Yukatec speakers favour substance; Americans categorize objects by shape; function of objects encourages categorization by shape
	Imai and Gentner (1997)	American English and Japanese	Triads matching test focusing on same shape or substance	Japanese speakers favour substance; Americans categorize objects by shape
Shape	Roberson et al. (2002)	Himba, Namibia: lack of monolexic terms for basic shape categories	Name learning, best example judgments, naming novel objects	Shape categories are language-dependent and culture-bound
Motion	Papafragou et al. (2008)	Greek (verb-framed language), English (satellite-framed language)	Naming and recognition memory tasks, eye tracking	Linguistic tasks: sentence structure guides the allocation of attention; no effects of language in non-verbal tasks
	Finkbeiner et al. (2002)	Spanish and Japanese (verb-framed languages); English (satellite-framed language)	Non-verbal similarity judgments	Similarity judgments are consistent with linguistic patterns when subjects are required to commit information to memory
	Flecken (2010)	Languages with a grammaticalized progressive/	Oral description of video clips, eye tracking, non-verbal tests for PATH endpoints	Languages marking ongoingness do not encode PATH endpoints; languages that do not mark

		imperfective marker: Arabic, English, Spanish, Russian, Czech and Dutch; languages without grammaticalized aspect: German; tendency to encode presumed PATH endpoints		aspect on the verb or prioritize perfective aspect encode endpoints, real or imagined; this tendency translates into non-verbal memory tests and eye movement patterns
Kinship relations	Anggoro and Gentner (2003)	English: kinship terms based on gender, i.e. brother/sister and Indonesian: kinship terms based on age, i.e. younger/older sibling	Picture recognition memory test, word extension (which variant could also be described as the label); non-verbal triads matching test	Indonesian speakers focus on seniority while the English encode gender in accordance with semantic patterns of their languages
Gender	Sera et al. (1994, 2002)	Spanish, French, German and English Spanish, French: two-class gender system, German: three-class system, English: no grammatical gender	Voice attribution	Languages whose gender system reflects natural gender distinctions are the most likely to show relativistic effects
	Ramos and Roberson (2011)	English and Portuguese	Voice attribution, semantic similarity ratings, triads matching	Portuguese monolinguals show gender effects in response to linguistic stimuli and when gender is relevant to the task
Artifacts	Malt, Sloman and Gennari (2003)	American English, Spanish and Chinese: household containers	Non-verbal sorting task, naming task	Naming patterns diverge from perceived patterns of similarity
Time	Casasanto and Boroditsky (2008)	English: encodes duration predominantly as distance (e.g. *a long party*), Greek uses the amount metaphor (e.g. *much time*)	Non-verbal computer animations portraying time as either growing lines or a container being filled	Mental representations of time co-vary with linguistic patterns

Table 2 continued

Bilinguals				
1	2	3	4	5
Counterfactuals	Bloom (1981)	Hong Kong Chinese-English bilinguals, Chinese lacks counterfactual constructions, English and Chinese monolinguals	Reading passage presenting a hypothetical situation, questions about content to check comprehension	English speakers have no trouble understanding hypothetical situations; the Chinese show little accuracy when interpreting such scenarios; Chinese-English bilinguals fall in between monolingual groups.
Number/ substance	Cook et al. (2006)	Japanese-English bilinguals, Japanese is a non-plural marking language	Triads test focusing on same shape or substance	Three years' residence in UK encourages English-like categorization by shape; shorter residence produces categorizations by substance
	Athanasopopulos (2006)	Japanese-English bilinguals: awareness of number, shape/ substance categorization	Replication of Lucy's (1992b) study, similarity judgments, picture matching	Intermediate Japanese-English bilinguals behave like L1 monolinguals; advanced bilinguals mirror L2 monolingual performance and opt for shape categorizations
	Athanasopopulos and Kasai (2008)	Japanese-English bilinguals: shape/colour categorization	Triads matching test	Intermediate Japanese-English bilinguals behave like L1 monolinguals; advanced bilinguals mirror L2 monolingual performance
Artifacts	Ameel et al. (2005)	Dutch-French simultaneous bilinguals, Dutch and French monolinguals	Object naming and sorting	Artifact naming is language-specific and is not mirrored by similarity judgments; bilingual

				naming differs from that of monolinguals
Colour	Athanasopopulos (2009)	Greek-English bilinguals: English *blue,* Greek *ble* (dark blue) and *ghalazio* (light blue)	Naming task, best example test, similarity judgment test	Advanced subjects show a shift towards the *blue* focus and away from *ghalazio*; similarity judgments inconclusive
	Athanasopopulos et al. (2011)	Japanese-English bilinguals: English *blue,* Japanese *mizuiro* (light blue) and *ao* (blue)	Similarity judgments	Bilingual colour similarity ratings fall in between the monolingual scores
Gender	Bessetti (2007)	Italian-German bilinguals, Italian: two-class gender system, German: three-class system	Voice attribution to pictured objects	Monolingual Italians show a gender effect, which has not been observed in Italian-German bilinguals
	Kurinski and Sera (2010)	English-Spanish bilinguals	Voice attribution to pictured objects	L2 gender effects are limited and do not increase with L2 proficiency

This said, it must be borne in mind that psychologists (Carlson et al. 2004; Dworetzky 1994) see perception as a rapid, automatic and subconscious process, the result of which is available as a finished product rather than the stages of the process. Even though it is sometimes necessary to take one's time and reflect on what can be seen, sensation (seeing the object) and perception (perceiving it) are not separate but integrated. Consequently, the distinction between sensation and perception has come to be regarded as arbitrary (Carlson et al. 2004).

An important caveat is that relativistic influence is subtle and selective; that is, it has only been detected in a few domains and in specific languages rather than across the board. The resultant dilemma is that it is very difficult indeed to delimit the exact extent and area of its occurrence. On the one hand, Papafragou et al. (2008) voice the opinion that relativistic effects do not extend beyond online conceptualization preceding verbalization. On the other, an increasing number of studies recognize that language-assisted categorization occurs at deeper conceptual levels. Also, it remains unclear what triggers relativistic effects and under what circumstances. In this connection, Athanasopoulos (2009) claims that only semantically salient linguistic categories have an impact on cognition. Imai and Mazuka (2003) in turn argue that language shapes categorization of experience in cases of perceptual indeterminacy and functional ambiguity. To put it another way, when an entity or domain is difficult to categorize because it lacks conspicuous defining features, "language exerts its maximum influence" (Imai and Mazuka 2003: 460). These suggestions are echoed by Roberson's (2005) evaluation of research into colour and confirmed by the fact that linguistic categorization of functionally determinate artifacts (Ameel et al. 2005) does not translate into the non-verbal domain.

On the structural front, studies of grammatical gender hint at the possibility that cognitive effects may only be induced by semantically motivated structures (Athanasopoulos 2009; Latkowska 2009; Sera et al. 2002; Vigliocco et al. 2005). Drawing on L1 acquisition orders, Gentner and Boroditsky (2001) see relational terms such as verbs and prepositions as being more linguistically influenced than concrete nouns. They base their views on the fact that many verbs and prepositions do not have perceptually defined referents, and therefore must rely on semantic distinctions inherent in a particular language.

In bilingual designs, an issue to consider is the role of culture. Some studies (Bassetti 2007; cf. Athanasopoulos and Kasai 2008) show that in the case of relativity culture may be insignificant, as the observed effects are language-dependent and bear no direct relation to environmental factors (Levinson 2003a; Majid et al. 2004). On the other hand, there is substantial evidence to suggest that conceptual restructuring requires direct contact with the L2 in its natural environment (Athanasopoulos 2009; Pavlenko 2003), and that formal learning seems ineffective with regard to the acquisition of conceptual representations. Under this view, language learning requires cultural backup. Wierzbicka (2005: 8) illustrates this point by arguing that incomplete foreign language learning confines learners to "a single conceptual

world" of their mother tongue where they have access to "two sets of labels" to refer to "a single set of concepts." It follows that it is not the language alone that causes changes but the culture that goes with it. If language is the sole instigator of conceptual change, as is claimed by the relativity proposal, there should be some effects in formal learning. This has been demonstrated by Athanasopoulos and Kasai (2008). In a subsequent study, Athanasopoulos (2009) obtained data implicating both culture and language as instigators of relativity.

Yet another issue in need of more research is that of proficiency in the non-dominant language. Here, Pavlenko (1999) comments that the relation between the L2 level and conceptual development does not need to be proportionate for the acquisition of L2 concepts to take place. Quite often, the most salient concepts are internalized by low proficiency learners. This said, it is important to note that language-driven categorization in the L2 cannot be put on a par with the acquisition of a new concept because both involve different processing conditions. In turn, proficiency understood as knowledge and use of specific components of the language system itself has rarely been considered in research into bilingual concepts. This is because some authors have linked proficiency to the length of residence in an L2 environment, with the minimum stay requirement ranging between 2 and 3.5 years (Athanasopoulos 2009; Athanasopoulos et al. 2010; Cook et al. 2006). Others like Ameel et al. (2005) and Bassetti (2007) investigated simultaneous and early bilinguals, respectively, and did not consider proficiency to be an issue. The Athanasopoulos research referred to above is an exception to the trend in that it used standardized proficiency measures and production tasks to assess the participants' actual knowledge of grammar and vocabulary. It turned out to be the main factor in the emergence of relativistic effects, and one that seems more significant than immersion in the target culture.

Other potentially contributing factors include the age of L2 acquisition (Bylund 2009), intensity of language contact, domains and contexts of language use, personal language history, the degree of acculturation, and the typology of the languages concerned (Pavlenko 2005, 2011b). The exact interplay and dependencies among these factors require further empirical clarification as it is not yet clear to what extent each of them contributes to the growth of bilingual skills and how they interact with one another.

Finally, by way of a summary, let us try and define linguistic relativity in terms of current research practice. According to Lucy (2004), linguistic relativity can be observed when a specific linguistic feature "guides and supports cognitive activity." Taking into consideration the variety of relativistic effects reported in the literature, the definition's lack of specificity should take no one by surprise. It cannot escape notice, however, that most of the studies reviewed in this chapter, including those by Lucy, are more exact and distinguish between linguistic evidence and related non-verbal behavioural data. This is consistent with the approach adopted throughout this work, which posits a dissociation between the conceptual and linguistic levels,

and which is otherwise known as the underspecification hypothesis (Papafragou and Selimis 2010). As the name suggests, one of its core assumptions is that linguistic categories are impoverished, and as such underrepresent their underlying cognitive structures. However, dissociation does not preclude the possibility of interaction between and beyond the domains concerned. Consequently, researchers have looked for linguistic effects in mental representations at the level of short- and long-term memory and in working memory processes involving the allocation of attention prior to, during and after verbalization. Moreover, the most recent studies, such as Gilbert et al. (2006) and Roberson et al. (2008, 2010) availed themselves of technologically advanced visual search techniques to examine patterns of colour perception in the right and left visual fields without engaging the subjects' memory. Both studies identified linguistic influence on colour perception in the right visual field. This result was confirmed by Athanasopoulos et al. (2010), who employed recordings of event-related potentials (ERPs) to examine colour perception in Greek-English bilinguals. Finally, fMRI research monitoring areas of brain activity was also conducted, implicating the involvement of the language areas in the left hemisphere (Tan et al. 2008). There can be no doubt that these studies have long abandoned the traditional, if not naïve, view of relativity where inner speech was taken to represent thought (Casasanto 2008). Instead, the focus of relativistic investigations has been redirected to neuro-psychological investigations of perception and "higher-level cognitive processes, such as reasoning, decision-making and similarity judgments" (Athanasopoulos 2011a: 30). Viewed against linguistic data, these processes constitute the cognitive platform for relativistic effects that are deemed to occur when cognitive structure mirrors linguistic structure in a non-linguistic condition. Such a design requires that language is either explicitly blocked or otherwise excluded from input processing. Accordingly, complete and effective exclusion of language from non-verbal formats has become a central theme of the current wave of neo-Whorfian investigations. The new formula does not include the thinking for speaking conceptualization effects observed prior to and during speech. In the rapidly growing body of literature on the subject, they tend to go by the name of a weak form of linguistic relativity (Han and Cadierno 2010).

2.5. Conclusion

In sum, current views on linguistic relativity construct a truly relativistic picture of language as a modifying force capable of affecting people's interpretation of experiential input, as well as of improving their general reasoning powers. Hence, it should not come as a surprise that bilingual data bolster relativistic claims. In the light of theories portraying the mental lexicon as a dynamic system of interacting codes, one can expect bilinguals to exhibit differences in both verbal and non-verbal domains that can be attributed not to just one language but two or more structurally

contrasting systems. Moreover, given that it is possible to isolate linguistic effects from their cultural underpinning (cf. Ameel 2005; Jarvis 1998), bilingual research holds the promise of disentangling the web of dependencies that exist among language, culture and human cognition. It may also help establish the basis for conceptual transfer since language-induced effects in cognitive processes will count as instances of conceptual influence.

Chapter 3

The Conceptual Transfer Hypothesis

The Conceptual Transfer Hypothesis (CTH), as advanced by Jarvis (1998) and Pavlenko (1999, 2005), attained its mature form in 2008 with the publication of *Crosslinguistic Influence in Language and Cognition* (Jarvis and Pavlenko 2008). In the book, conceptual transfer is defined as the effects of language-mediated conceptual representations, and of the resultant patterns of thought on an L2 learner's (bilingual's) use of the L1 and L2. Jarvis' 2011 publication on the subject delimits the scope of the phenomenon in more precise terms by defining it as "the effects of patterns of cognition acquired through one language on the receptive or productive use of another language" (Jarvis 2011: 3). On a practical level, conceptual transfer is deemed to occur when speakers of different L1s use different criteria to verbally categorize the same referents in their L2 (Jarvis and Pavlenko 2008). There should also be consistency in the way an L2 user refers to specific denotata in the L1 and L2, despite conceptual contrasts between the corresponding domains in both languages (Jarvis 2007).

This view of conceptual transfer is fraught with considerable methodological difficulties since in order to ascertain the occurrence of cross-linguistic conceptual transfer, it is first necessary to show linguistic effects in non-verbal cognition. This in turn impinges on the linguistic relativity hypothesis (Odlin 2005, 2010). Jarvis and Pavlenko (2008) have repeatedly emphasized the distinctiveness of linguistic relativity and of conceptual transfer, the latter of which, they stress, denotes the influence of language-mediated habitual thought on linguistic behaviour. Even so, Jarvis (2011) admits there is a great deal of overlap between the two theories since both of them encompass online conceptualization processes, as exemplified by thinking for speaking and event construal. Moreover, both take on board the possibility of linguistic influence on categorization and event recall. What makes them different is their focus of attention, i.e. non-linguistic behaviour for linguistic relativity and language use for conceptual transfer. Finally, contrary to the established tradition in contrastive linguistics, the conceptual transfer hypothesis does not attempt to resolve the question of whether bilinguals have different concepts. Instead, relying

on the existent body of data in the field, it aims to find out if the attested conceptual differences manifest themselves in the verbal repertoire of bilinguals. This is how Jarvis (2011: 4) explains the logic behind the theory's preoccupation with language: "It is, of course, impossible to demonstrate conclusively whether cross-linguistic effects have indeed arisen from the conceptual level […]." For this reason, related research does not attempt to "settle the question of whether cross-linguistic effects arise from language-specific concepts and language-specific patterns of conceptualization, but rather to examine whether the predicted linguistic consequences of hypothesized differences of these types can in fact be found."

This chapter evaluates the Conceptual Transfer Hypothesis by examining Jarvis and Pavlenko's rationale for investigating concepts through the prism of language. Whenever possible, it also considers the alternative relativistic claim regarding the need to resort to non-verbal tests to identify the underlying conceptual patterns. To resolve the differences of opinion as to which of the two approaches is the best course to follow, the chapter elaborates on whether and to what extent research into cross-linguistic conceptual transfer may rely on insights from verbal and non-verbal designs. Related methodological concerns are discussed in the process.

3.1. Assessing the scope of the phenomenon

In the special issue of *Bilingualism: Language and Cognition*, Jarvis (2011: 1–3) explains that the term *conceptual transfer* is operational on three levels: as an observation, approach and hypothesis. The level of observation is informal and has to do with anecdotal evidence of L2 English learners with different L1s referring to the same items in ways showing not only linguistic differences but also underlying contrasts in cognitive appraisal. This can best be illustrated by an English learner's comment on a bowl of cereal: *These are good.* In Jarvis's view, it shows a difference in the perception of the referent's characteristics. In response, it will be informative to return to the example quoted by Odlin (2005), who points to the tendency of Polish users of L2 English to mistakenly mention a third party when referring to two individuals, e.g. *Yesterday we were at the cinema with John* 'Wczoraj byliśmy z Jankiem w kinie'. Such a statement is likely to make L1 English speakers think of at least three people, as implied by the sentence's literal meaning. Poles, however, are never confused about the number of the individuals involved. Odlin remarks that linguistic contrasts like these do not necessarily reflect underlying conceptual differences.

The second level, that of an approach, is connected with the theoretical stance adopted by cognitive linguistics. Even though the field is diverse and in a state of constant development, what most of its schools have in common is that they do not draw a sharp distinction between the linguistic and conceptual levels. In fact, they emphatically state that linguistic structure mirrors the structure of the mind.

At the level of the hypothesis, a prediction is made that conceptual transfer manifests itself as "the effects of one language on the verbalization of thoughts in another," and is assumed to arise from "differences in the linguistic encoding and thus linguistic salience of a particular domain" (Jarvis and Pavlenko 2008: 115, 149). But, if conceptual transfer engages solely the linguistic, it must be linguistic in nature. If, on the other hand, it is the effect of how the linguistic moulds the conceptual, it must touch on linguistic relativity, a point denied by the authors. Simply put, to show that truly conceptual transfer from L1 to L2 has taken place it is necessary first, to ascertain the L1's influence on non-verbal cognition, and second, to establish how the L1-shaped conceptual domain affects the use of the L2. Seen in this light, the contention that conceptual transfer is (an extension of) linguistic relativity appears to be fully justified as it is impossible to test cross-language conceptual influence without impinging on the non-verbal domain. On his part, Jarvis (2011: 3) argues against the logic of this argument and states that "work on conceptual transfer is usually not directed at settling the question of whether speakers of different languages have different concepts or conceptualizations, but rather at deriving testable hypotheses from existing theoretical and empirical work in cognitive linguistics concerning such differences, and testing whether the language use of language learners, bilinguals or multilinguals is consistent with those hypotheses." From an empirical point of view, such a position lacks validity.

3.2. Issues in investigating the linguistic/non-linguistic interface

Unfortunately, non-verbal tests can easily be applied only to concepts developed for concrete objects and observable phenomena, as indicated by the research literature on categorization in the realm of observable and/or individuated entities (see Sections 2.1.1 and 2.1.2). Abstract concepts pose a challenge because in their case it is difficult to distinguish between linguistic meaning and a non-linguistic concept that would be amenable to non-verbal exploration.

At least one language-based study seems to have countered this position, however. Sachs and Coley (2006) used script-based scenario triads and a free sorting task to elicit similarity judgments in a study of *envy* and *jealousy* in Russian and English. Despite the verbal character of test stimuli which included descriptions of situations that were likely to evoke either envy or jealousy, or both, the authors succeeded in establishing that perceptions of scenario similarity did not reflect naming patterns. It must be stressed that the scripts offered for judgment created a pragmatic context for abstract lexicalized targets, yet did not contain any of the targeted lexemes. This made them suitable for accessing the underlying frameworks activated by the verbal descriptions. A second study worthy of mention is Pavlenko (2003; cf. Pavlenko 2011a), who employed silent film retellings to investigate the concept of *privacy*, and in doing so detected

the acquisition of a new concept. This was evidenced by the fact that the word *privacy* and the corresponding concept were not mentioned by those monolingual subjects who lacked exposure to American culture and presumably did not have an opportunity to acquire them.

A possible explanation for these results might be that abstract concepts are dependent on language and introspection for both acquisition and expression (Gentner and Boroditsky 2001). This proposal is aligned to the traditional view of language as a formative agent in the acquisition, processing and representation of abstract concepts. According to Kousta et al. (2008), concrete concepts bind sensory-motor information in the form of visual, auditory, tactile and gustatory formats, while abstract concepts are founded on affective and linguistic experiential input and are therefore more susceptible to linguistic influence (cf. Malt et al. 2010). This dependence on language and linguistic context for interpretation has been confirmed by fMRI brain scans. They showed clearly that judgments of abstract synonyms activated areas involved in semantic processing at the sentence level (Noppeney and Price 2004: 164). Thus although language is not the only agent contributing to conceptual representations for abstract words, it is a viable and operational channel for accessing them. Such a solution has been given the green light in conceptual metaphor theory that explores the abstract in terms of the concrete, building on patterns observed in language. It is also a common practice in psychology to try and reach abstract concepts through discussions and monologues inspired by specific contextual clues. Consequently, inner states like attitudes, beliefs and opinions, which are difficult to examine by observing outward behaviour, are assessed via analyses of conversation transcripts (Dworetzky 1994). A practical implication is that abstract concepts may match abstract word meanings quite closely, and hence should be treated as representationally different from concrete concepts. They should also be researched differently.

A radically different explanation has been offered by research into abstract concepts within the framework of situated cognition. Barsalou and Wiemer-Hastings (2005) contend that context (situation) availability rather than language is a prime factor in the processing of all concepts, concrete, abstract and those with an intermediate level of abstractness. Presented in context, abstract and concrete words show no processing contrasts with regard to comprehension, response time and memory. The implication is that research materials should contain ample contextual information. In referring to conceptual metaphor, Barsalou and Wiemer-Hastings (2005) observe that quite a few abstract concepts are rooted in experience. For example, most, if not all, of us know how it feels to be disappointed or offended. We also know what is likely to cause offence or disappointment and how those affected tend to behave. In their opinion, direct experience is a more powerful predictor of conceptual structure than metaphor. A final comment is that Barsalou and Wiemer-Hastings used think-aloud protocols to investigate the structure of concepts and thus conflated the semantic and conceptual levels.

Unfortunately, the tendency to indiscriminately use language as a tool for conceptual analysis has been widespread, especially across disciplines based on the premise that representations of linguistic knowledge are the same as those of conceptual knowledge. Accordingly, a number of linguists analyse concepts through the lens of language, and connect linguistic diversity with conceptual diversity (Pavlenko 2009; Wierzbicka 1996). In their appraisal of current thinking on the word-to-world relation, Malt et al. (2010: 34) observe that this position may be hard to evaluate empirically "since the conclusion has been drawn before any data are collected." Consequently, they take a more cautious stance and make no assumptions of conceptual/semantic equivalence (Malt et al. 2010).

Following from the above is the conclusion that the difference between non-linguistic conceptual transfer and linguistic semantic transfer may be obscure at times. In the opinion of Jarvis and Pavlenko (2008), semantic transfer involves cross-linguistic influence at points where word meanings are mapped onto concepts. This is most obvious in cases of polysemy and homonymy, which vary in range across the linguistic spectrum. As a result, mistakes such as *your lock is broken* made by a Pole referring to a broken zip can be seen as resulting from an incorrect word-concept mapping, i.e. semantic transfer. In Polish *zamek* is a homonym signifying, among other things, zips and locks. Likewise, the tendency to name *woolly hats* **caps* 'czapki' by Polish learners of English exemplifies transfer at the semantic level since, in Polish, the range of a *cap* as a form of headwear is inclusive of the English *hat*. Also, a Pole who calls a *plastic cup* a *mug* by analogy to his L1 *kubek* 'mug' is clearly implementing semantic transfer. In both cases, however, it is possible that semantic and conceptual transfer coincide. To ascertain whether conceptual transfer has taken place it would be necessary to show that non-verbal categorizations of *kubek* and *cup*, *czapka* and *hat* mirror their linguistic labelling. Without probing the non-verbal domain, references to conceptual transfer remain an educated guess.

This line of reasoning is consistent with the research into object categorization in a culturally homogeneous context (Ameel et al. 2005; Malt and Sloman 2003, 2007). Its findings show a dissociation between linguistic naming and non-linguistic categorization, with naming patterns varying considerably across languages and non-linguistic categorization remaining relatively uniform (Ameel et al. 2005; Malt et al. 1999). In fact, Malt et al. (2010) observe that non-verbal similarity judgments produced correlations well above 0.90 for all of the diverse language groups in their research. In Ameel's (2005) opinion, such a dissociation shows that semantic and conceptual contrasts could best be explained in terms of the verbal/non-verbal and linguistic/non-linguistic oppositions. She also admits that it may sometimes be impractical to distinguish between these two levels, especially in cases of direct semantic and conceptual overlap.

3.3. Methodological concerns

In the light of the foregoing, it can be concluded that research into conceptual transfer is fraught with considerable theoretical and empirical inconsistencies. On the theoretical level, it is necessary to establish whether what passes for conceptual transfer in the literature is truly conceptual, and reach a consensus on whether and under what circumstances the conceptual domain can be probed through language. Jarvis and Pavlenko (2008; Pavlenko 2009) argue that verbal labelling, especially in bilingual contexts, reveals the underlying conceptual contrasts between the languages involved. Still, it cannot be stressed strongly enough that such claims need to be kept in perspective since research into artifact naming (Ameel et al. 2005) and emotion terms (Gendron et al. 2012; Sachs and Coley 2006) shows that verbal categorization does not always transfer into non-verbal judgments. Besides, investigations in the field of linguistic relativity demonstrate definite linguistic effects predominantly in those conceptual domains that either lack functional specificity (Imai and Gentner 1997; Imai and Mazuka 2003) or are perceptually indeterminate (Roberson et al. 2005, 2008). Taken together, these findings form a basis for preliminary guidelines on research procedures and may help ensure accuracy and precision of data collection and interpretation. Given the novelty of the field and the breadth of the subject matter, the guidelines will have to be tested in subsequent research and adjusted to specific lexical and syntactic configurations exhibited by the language pairings under investigation. Thus, considering that "conceptual judgments about abstract entities or unseen object properties" are consistent with linguistic patterns, while judgments about visual object characteristics do not confirm language-based predictions" (Casasanto 2009: 142), prospective research should centre on the perceptible-imperceptible contrast, in line with the following recommendations:

a. Cross-linguistic differences in the verbal labelling and grammatical status of concrete objects cannot be assumed to reflect their underlying conceptual basis. Consequently, any of the contrasts found will need to be confirmed by a non-verbal test (Malt and Ameel 2011).

b. Perceptually unindividuated domains such as colour, space and matter are likely to produce relativistic effects and show susceptibility to cross-linguistic influence. Because these domains are observable, any assumed cases of conceptual transfer should be verified in a non-verbal design.

c. Abstract lexicalized and unlexicalized concepts may have to be investigated via language. In fact, this is where one can expect a relatively tight mapping between semantic and conceptual domains. It is pertinent to note that the tight mapping is not equivalent to isomorphy of the two levels (Paradis 2007).

Since determining the extent of concept abstraction may pose practical problems at the level of research design, in this paradigm, abstract concepts should be understood as those representing activities, states and phenomena that are not perceptible and hence exist as ideas in the mind. In this connection, it is

vital that the linguistic (e.g. scenario descriptions) and non-linguistic (e.g. silent films, if applicable) stimuli used in the research activate the relevant conceptual knowledge frameworks by providing a sufficient amount of (culture-specific) context without suggesting exact lexical choices to the participants. Contextual backup is instrumental in distinguishing between the meanings/concepts of polysemous words, some of which may be concrete (perceptible), i.e. *a sea wave*, *the royal wave*, and others abstract, i.e. *a wave of crime/interest*. It is also essential in identifying sarcasm and irony, as these rely on interpretations that are the opposites of the usual meaning of words/concepts. For this reason, the context should be commensurate with the nature of the stimuli used. What is more, the verbal prompts should be subject to the same testing procedures as the non-verbal ones, i.e. naming, categorization, similarity judgments and the like. If these requirements are met, the elicited verbalizations in the form of single words, phrases, structures, sentences and even paragraphs (Francis 2005) may be assumed to (schematically) reflect their conceptual underpinning. Because these proposals have not been verified empirically, and because the notion of a close mapping between conceptual and lexical categories for abstract entities has not been granted equivocal support, one should not dismiss the possibility that language will have to be excluded from stimulus presentation and interpretation altogether, irrespective of the nature of the targeted items. This may help avoid interference from other lexical categories that were simultaneously activated by the linguistic context of the stimulus materials.

d. Initial evidence suggests that emotion words, albeit traditionally regarded as being abstract, are represented and processed differently from abstract words (Pavlenko 2008b). This, however, does not change their relation to language, as it remains a precise, though clearly not the only channel for accessing them. It is also useful to pay heed to Dewaele's (2008) warning that subjects may be reluctant to disclose their innermost feelings and openly discuss them with an interlocutor. This will make emotion concepts harder to delimit. There will also be enormous inter-subject differences caused by the wealth and unpredictability of experience, and reinforced by growth in maturity and life histories of particular subjects (Paradis 2008). A solution is to test groups and look for patterns in their output. Dewaele (2008) also recommends caution in dealing with data obtained through a single technique.

e. Concepts that are unlexicalized in one of the bilingual's languages may be examined by eliciting film (video clip) retellings or discussions in each language. If the stimulus content is kept constant, inferences can be made on the basis of contrasts in the wording of references to specific plot elements in each language, or indeed, their presence or absence. As regards the latter, the lack of a reference to a concept may not always be indicative of its absence or incomplete representation in the bilingual's lexicon (cf. Pavlenko 2011a, 2011b). Also, incorporating mime and roleplay could shed light on how particular concepts are either acted out or made sense of in specific contexts.

f. Film (video clip) retellings may also be employed to detect cross-linguistic differences in predicate structure that are induced by grammatical aspect or differences in preferred lexicalization frames (see Sections 2.2.1 and 2.3). It must be stressed at this point that it is one thing to identify a concept that is either non-existent or encoded differently in one of a bilingual's languages, and another to assess its role in non-verbal cognition and the ensuing use of language. Grammatical aspect is a case in point. Even though the category itself is easy to identify, it is still necessary to establish if it has an impact on endpoint encoding, as demonstrated by the data for Czech and Dutch (Flecken 2010).

By way of explanation, it is necessary to add that the present approach adopts a much broader view of language than that represented by Whorf, who spoke of language in terms of its grammar, which he saw as an attention-directing system (Whorf 1956; cf. Talmy 2008). It seems that this somewhat limiting view was soon abandoned by researchers, as shown by some of the earlier studies whose main concern was with the lexical codability of the colour spectrum (Brown and Lenneberg 1954). Secondly, following Jarvis's (2007) argumentation, one should not lose sight of the fact that verbal tasks are essential to the study of conceptual transfer. Still, analyses of grammar and vocabulary will inevitably show a linguistic bias, and possibly subjectivity and cultural partiality. To paraphrase Jarvis and Pavlenko (2008), the closest language-based analyses can get to the conceptual level proper is when they isolate pure semantic phenomena from overlapping conceptual/semantic representations, in line with Odlin's (2005, 2010) postulate that conceptual transfer is semantic (and pragmatic) but not all semantic transfer is conceptual. It must be said, however, that even though it is a step towards isolating conceptual influence in some contexts, it is a far cry from detaching it from language.

Equally confounding is the question of when cross-linguistic conceptual transfer can be expected to obtain. In an attempt to resolve this dilemma, Jarvis (2007) constructs four general scenarios, which include the lack of a conceptual counterpart in one of the bilingual's languages, differences in category prototypes, peripheral members, and in overall category membership. Paradoxically, his subsequent publication on the subject, co-authored with Pavlenko (Jarvis and Pavlenko 2008), draws on an impressive bulk of studies to show how these scenarios apply to linguistic rather than conceptual categories. This is illustrated by the studies cited in evidence of conceptual transfer in the chapter on *Crosslinguistic Differences and CLI in Eight Conceptual Domains* (Jarvis and Pavlenko 2008). To give an example, Malt et al. (2003) explore naming patterns in three typologically and culturally contrasting languages (English, Mandarin Chinese and Argentinian Spanish) and demonstrate considerable variety only in the naming area, while non-verbal similarity judgments show characteristic congruity! An additional finding of theirs is that the bilingual subjects' word choices diverge from those of native speakers. So does the L2 output of Russian-English bilinguals who show a propensity to

categorize paper cups as tumblers 'stakany' by analogy to L1 lexical distinctions. Jarvis and Pavlenko (2008) believe this to arise from conceptual transfer because the individuals in question have had to restructure their L1 categories to match English naming patterns. What casts doubt on such an interpretation is that, apart from failing to distinguish between the linguistic and the conceptual, it seems to result from overprediction by assuming that areas of difference, either structural or semantic, will inevitably invoke conceptual transfer. To illustrate this point further, let me turn to the notoriously problematic acquisition of L2 grammatical gender by speakers of languages that do not mark nouns for gender or have a different number of gender categories and/or different assignment patterns for translation equivalents, i.e. neuter in L1 and masculine in L2. A number of studies (e.g. Dewaele and Veronique 2001; Salamoura and Williams 2007) have shown that cross-linguistic transfer of gender categories is for the most part a syntactic phenomenon associated with agreement within the phrase and having no impact on the conceptual level. A few studies claim the opposite, however (see Boroditsky et al. 2003). In this vein, Bassetti (2007), following Vigliocco et al. (2005) and Sera et al. (2002), attributes relativistic potential only to languages with a binary gender system, e.g. masculine and feminine. Her claim as yet has not received equivocal empirical support. Yet, Jarvis and Pavlenko (2008) classify erroneous gender assignment caused by either a mismatch between L1 and L2 gender categories or failure to assign a category in cases when one of the languages lacks grammatical gender altogether, as instances of conceptual transfer. Given that relativistic effects in this area do not occur across the board, this constitutes a case of overprediction. Indeed, Kurinski and Sera (2010) confirm that the effects of learning grammatical gender in L2 Spanish on adult English speakers' voice assignment decisions are limited and can only be observed in some categories, e.g. masculine nouns and artifacts. What is more, they are much weaker than those observed in Spanish native speakers. Finally, since few of the studies Jarvis and Pavlenko quoted actually probed the non-verbal domain, their treatment of the subject exemplifies overinterpretation, which in fact the authors seem to be aware of.

Secondly, any proposal regarding conceptual transfer must consider the wealth and complexity of human experience and of the resultant conceptual base, as presented by the various theoretical perspectives developed over the years (see Section 1.2). For this reason, a complementary strand of inquiry should be organized around a theory of concepts developed for various contexts and situations, e.g. scripts, because it brings to bear the defining feature of human cognition, i.e. its embodied and context-dependent nature (Barsalou 2012). Moreover, in view of the fact that language underrepresents concepts, and that they can be guessed at through the processes of meaning negotiation, emphasis should also be put on the pragmatics of communication. Considering its role in processes of meaning construal and negotiation, it is evident that pragmatics has a conceptual basis and that pragmatic transfer is simultaneously conceptual in nature (Latkowska 2010).

Thirdly, the conceptual transfer hypothesis acknowledges the acquisition of new concepts through interaction with users of the L2, i.e. language socialization. The concepts may be grammaticalized, e.g. number, lexicalized, e.g. *privacy*, or conventionalized, e.g. discourse strategies, and will manifest themselves in language use. In this connection, a factor worthy of consideration is the salience of such categories in both linguistic encoding and discourse. This becomes most apparent in the target language context where rich cultural content highlights conceptuo-cultural discrepancies, especially those involving concepts that function as cultural landmarks and are therefore referred to quite often. Consequently, the learner is confronted with conceptually-driven linguistic choices that motivate cross-linguistic influence and concept acquisition (Jarvis and Pavlenko 2008; Paradis 2007). What is more, concepts of this type, e.g. *privacy*, draw on reservoirs of world knowledge, and as such can easily be tapped through language, as shown by studies that investigate word meanings and/or concepts through lexical associations, definitions and descriptions (cf. Barsalou and Wiemer-Hastings 2005). Such studies reinforce informal observations of conceptual contrasts because learners from different L2 and cultural backgrounds noticeably build on different experiential bases when describing *concepts*. For instance, monolingual Americans describe *ambition* as a positive thing, while monolingual Chinese provide mainly negative descriptors (Kecskes 2007). As demonstrated in Chapter 1, all human concepts can be analysed in this way because words, albeit schematically representative of concepts, function as access sites to the experientially rich conceptual domain. Its contents are unleashed in tasks involving presentation and/or expression of word-related world knowledge, which can be quite general or specialized. This, however, does not mean that encyclopedic knowledge can be put on a par with non-linguistic cognitive processes involving the allocation of attention, event recall and non-verbal categorization. They have different functions and are invoked by different tasks and operations. Accordingly, one is led to the inevitable conclusion that the term *conceptual* is inadequate to describe what appears to be a set of different and perhaps independent cognitive procedures, and that the hypothesis' scope is too broad to justify claims of empirical verifiability. What is more, in order to prove or disprove the hypothesis' basic tenet, it is necessary to show that language either has or has not a formative influence on non-verbal cognitive processes and categories. This can be achieved by reference to linguistic relativity and non-verbal testing procedures, especially in a bilingual context. Bypassing non-verbal representations will, first, render the hypothesis untestable, and second, will confine the ensuing research to the linguistic level and disciplines that customarily rely on language as a means of description of extralinguistic reality.

Finally, an explanation is in order with regard to the direction of transfer processes, as predicted by the conceptual transfer hypothesis. Even though this section has made numerous references to linguistic relativity and draws extensively on the idea of the L1 being a modifying force in cognition and subsequent L2 use,

this should not be taken to imply that conceptual transfer is unidirectional. On the contrary, as shown by research involving bilinguals (Athanasopoulos and Kasai 2008; Cook et al. 2006), advanced proficiency in an L2 is likely to bring about general conceptual restructuring, termed reverse transfer or conceptual change by Jarvis and Pavlenko (2008). Pavlenko (1999, 2005; cf. Pavlenko 2011b) also presents a continuum of processes representing varying degrees of L2-induced concept conflation and/or separation. The continuum displays a range of possible forms adopted by specific conceptual configurations under conditions of context-dependent activation and acquisition (cf. Paradis 2007). It encompasses the following processes:

a. The internalization of a distinct L2-related concept. It may result in a co-existence of otherwise independent language-specific concepts in bilingual memory.

b. Restructuring, i.e. the inclusion of new features into already existent concepts.

c. Convergence, i.e. the creation of a unique concept combining features of relevant L1- and L2-related concepts and yet being distinct from both. Kecskes (2007: 29) refers to such concepts as synergic concepts and defines them as blends that are lexicalized in both L1 and L2 "but have a different socio-cultural load in each language."

d. Shift from L1 to L2 concepts. It manifests itself as a preference for L2-based concepts, and thus may be linked to the attrition of particular categories connected with specific L1-related domains (Jarvis and Pavlenko 2008: 155).

What must be stressed is that the continuum is logical rather than chronological. This is why the field needs longitudinal projects that would uncover the timeframe for the hypothesized conceptual changes. Moreover, to acquire empirical validity the continuum must, whenever possible, be confirmed by non-verbal research, as well as by explorations of contextual and task effects. An attempt should also be made to refine the understanding of conceptual transfer. At present, it is assumed to show itself as consistency in the way a particular bilingual refers to objects and events in both L1 and L2, despite conceptual contrasts between the corresponding domains in both languages (Jarvis 2000, 2007). Because such consistency in referring to conceptual representations is only possible in cases of conceptual and semantic conflation, the need to revise both the underlying theoretical framework and the resultant definitions becomes all the more urgent.

3.4. The linguistic dimension

Since the main concern of the hypothesis is with language use, part of the methodology applied to test is by design verbal. Depending on the area under investigation, it employs primarily naming tasks based on stimuli such as colour chips, pictures, artifacts, video clips, and scenario scripts. It is essential for the stimuli to be devoid

of bias towards prototypical specimen and/or available translation equivalents, and to be embedded in an authentic context whenever relevant and possible. This is because different features of the same representation may be activated in different contexts (Pavlenko 2008a; cf. Barsalou and Wiemer-Hastings 2005).

As the term suggests, naming tasks are used to elicit lexical labels and verbalization patterns in the form of words, phrases and sentences which can then be analysed with regard to their typicality as lexical labels for the targeted denotata and potential cross-linguistic contrasts. They will also serve as a frame of reference for non-verbal data. Utterances at the sentence level provide information about framing patterns, temporal perspective and clause structure. Some of them will contain circumlocutions for unlexicalized concepts, or for those in the process of attrition or incomplete acquisition. In turn, conceptualization-oriented research may need more data than a single sentence. A solution to this problem is to use elicited narratives, such as storytelling and silent film retellings. These may be either oral or written and take the form of a running commentary on what is going on in the film, or of a report on what has been seen. The online/offline task format has an impact on the content verbalized in the narrative (Habel and Tappe 1999). Irrespective of their format, film retellings have the marked advantage of holding the referential content constant. They also relieve the subjects of the cognitive burden of having to come up with a story. What is more, the data collected in this way provides a window on how bilinguals and monolinguals name and construe specific referents in context, in addition to shedding light on the semantic and conceptual content that was not verbalized in the targeted word forms but found expression in other parts of speech or sentence. A case in point is the use of adverbs of MANNER in descriptions of motion events, compensating for the failure to encode MANNER in the verb in the L2 English of less proficient bilinguals (see Section 2.2.6). Last but not least, narratives contain pragmatic and discourse information and constitute a precise rendition of the subjects' perception and conception of the stimulus situation. This may be used to advantage by researchers who produce their own prompts, and who therefore have the freedom to manipulate contextual factors that influence language use (Pavlenko 2008a). The extent to which scenario scripts can be used to access perceptions of abstract and emotion words (Sachs and Coley 2006) has been discussed in Section 3.3.

For verbal techniques to be of value to bilingual concept-oriented research, it is important that they be used under suitable testing conditions and in accordance with approved experimental procedures. Some of them are presented below:

a. Each bilingual subject needs to be tested twice, once in each language, using the same elicitation tools. To avoid language order effects, the order should be randomized. To avoid practice effects, which might affect output correctness and the amount of conveyed detail, the subjects should never be tested in both languages during the same session. The testing sessions should be at least a few days apart (Pavlenko 2008a). To control for language mode effects, each session should be

conducted solely in the language being tested and, if possible, by a native speaker of that language.

b. As the Conceptual Transfer Hypothesis is concerned with the first language-concepts-second language circuit, it is necessary to include monolingual controls in the research to ascertain the existence of potential differences between monolinguals and bilinguals. To ensure reliability and validity of findings, all of the subjects should be matched for age, as well as social and educational status. In the case of bilinguals, it is also necessary to consider factors such as proficiency in both languages and in the domains under study, patterns of language use and the manner and/or context of L1/L2 acquisition, including the length of stay in a specific language environment (Athanasopoulos 2011a).

c. The overall focus of the research should be on intergroup differences. Additionaly, the analysis of performances of specific groups will produce data on intragroup behaviour (Jarvis and Pavlenko 2008).

As previously explained (see Section 3.1), the scope of the Conceptual Transfer Hypothesis requires that verbal tests are used in combination with non-verbal tasks for the purpose of uncovering underlying conceptual patterns. In support of this rationale, Casasanto (2008: 67) comments:

> […] inferring cognitive differences solely from linguistic differences is hopelessly circular. Patterns in language can serve as a source of hypotheses about cognitive differences between members of different language communities, but some sort of extralinguistic data are needed to test these hypotheses: Otherwise, the only evidence that people who talk differently also think differently is that they talk differently!

Table 2 in Section 2.4 presents an overview of the non-linguistic techniques that could be used for this purpose. A few comments, however, are necessary:

a. First of all, even though the non-verbal tasks used in relativistic research claim to access non-linguistic representations without invoking language, only those tasks that make minimal demands on memory can be hypothesized to effectively exclude language from input processing (Finkbeiner et al. 2002). An example is a similarity judgment task that presents the stimuli simultaneously. The inhibition of language may also be achieved through verbal interference tasks, otherwise known as shadowing.

b. As regards the choice of prompts, more attention should be paid to nuances of the phenomena under investigation, as these are likely to affect the content of conceptualization. More specifically, research into Motion (Pourcel 2009; von Stutterheim et al. 2009) shows that the visibility of Path endpoints may determine which component of motion is conceptualized and to what extent. For instance, in human motion, telic paths encourage a Path bias, while atelic paths accentuate Manner, although a residual Path bias may still be observed. These concerns

speak in favour of video materials since they supply a considerable wealth of visual detail, much greater than still pictures. This does not provide grounds for dismissing studies involving still pictures since Winawer et al. (2008) found that still photographs depicting motion activate those brain areas that are engaged in the processing of real motion (cf. Czechowska and Ewert 2011).

c. Finally, the use of advanced research technologies such as ERPs and fMRI scans suggests that linguistic relativity, now more than ever, is a domain that requires pooling of resources from across cognitive sciences, including linguistics, psycholinguistics and neuroscience. This observation by extension applies to most investigations of conceptual representations at the language-cognition interface.

All in all, the role of linguistic investigations into conceptual phenomena remains open to further debate. For one thing, conceptual phenomena are no longer understood in terms of monolithic thought, but tend to be broken down into short- and long-term memory processes and processing mechanisms, such as the allocation of attention, event recall, categorization, and the choice of content for verbalization. Of these four, categorization and event recall are at the heart of linguistic relativity and require non-verbal measures. Online conceptualization processes call for verbal and non-verbal records of long-term storage and eye movements, respectively. As regards linguistic data, their role in investigations of the conceptual domain remains tightly linked to theoretical positions on the language-thought interface in general, and the area under investigation in particular. More specifically, Barsalou and Wiemer-Hastings (2005) used think-aloud protocols to explore the contents and structure of abstract conceptual categories, contradicting relativistic recommendations. Clearly, to evaluate the influence of linguistic categories on non-verbal cognitive processes, researchers need evidence from non-verbal procedures. On the other hand, non-verbal procedures, at least those used by relativistic research, may not be able to provide information about the complexity of conceptual operations and categories. The von Stutterheim research illustrates this in a practical way by showing that linguistic analysis is the key to understanding conceptualization processes that run deeper than linguistic levels. A telling example can be found in the output of bilingual subjects who rely on conflated L1/L2 patterns of information structure even though these are not sanctioned by the syntax, or indeed, discourse organization in their languages. An additional factor to consider is that cross-linguistic differences are also likely to occur in the realm of comprehension, as bilinguals and monolinguals alike habitually interpret messages in terms of what they normally hear and how they have learned to make sense of it when communicating in a particular language. This in turn implicates the vast domain of pragmatics where conceptual content is often manifested through inference and conjecture rather than as literal linguistic meaning.

Considering the enormous complexity and dependency of the networks identified in the debate and the fact that they have evolved to work together as a self-contained system, it becomes clear that the analytical studies conducted to

date have only clarified a few of the simpler dependencies at the language-thought interface and that much more research should be conducted before any definitive recommendations regarding this issue can be made.

3.5. Conclusion

The Conceptual Transfer Hypothesis argues that conceptual and linguistic representations have an observable impact on each other, and that the results of this interaction can best be attested in the content and form of a bilingual's linguistic output. Appealing as they are, it may be difficult to subject these claims to the rigour of empirical validation because in its present form the hypothesis does not distinguish carefully between the linguistic and non-linguistic domains. Moreover, its treatment of conceptual representations lacks consistency since, despite the authors' theorizing on the subject of conceptual development and structure, the hypothesis expresses an interest solely in the linguistic differences that may be ascribed to the conceptual level (Jarvis 2010). What seems to have escaped the authors' attention is that without probing the conceptual domain in a manner characteristic of linguistic relativity research, there can be no guarantee that the observed linguistic differences have a conceptual source.

The present chapter has evaluated the assumptions of the hypothesis, placing emphasis on whether, how and to what extent the conceptual domain can be reached through language. Although the autonomy of the two systems has been stressed throughout this work, it is important not to lose sight of the fact that they remain in a close relationship and are to a certain extent mutually dependent. This is how they reveal themselves in acts of interpersonal communication, both verbal and non-verbal, bilingual and monolingual. It is this two-way interaction that remains at the heart of the Conceptual Transfer Hypothesis. For this reason, it is critical that research in the field seek an understanding of the interplay of the factors and conditions determining the character of (lexicalized) concepts, their acquisition, development, and influence on the linguistic and cognitive functioning of individuals. As regards research procedures, there can be no doubt that when confronted with an issue of such enormous complexity as conceptual representation, researchers have no choice but to resort to a variety of data sources and research methodologies, hoping they will enable them to capture some of the intricacy and uniqueness of human thought and its relation to language.

Chapter 4

Study 1: Investigating semantic and conceptual categorization in the domain of interpersonal relationships in Polish and English

Central to the Conceptual Transfer Hypothesis (CTH) is the assumption that language has a formative influence on cognition and that via cognition it has the capacity to influence the use and structure of languages acquired later in life. This is possible because the patterns of thought shaped by the first language project onto comprehension and production processes in the second and subsequent languages. In the opinion of Jarvis and Pavlenko (2008; Jarvis 2011), conceptual patterns manifest themselves as choices of linguistic categories; hence to investigate cross-linguistic conceptual contrasts, it is sufficient to analyse linguistic patterns in monolingual speech and find out whether and to what extent they differ from those observed in the output of bilingual speakers. This is how Pavlenko (2009: 131–132) explains the rationale behind using a naming task for finding cross-linguistic and/or conceptual differences between the Russian *chashki* and *stakany* and the English *cups* and *glasses*:

> A naming task will reveal […] that [semantic/conceptual] equivalence is limited to the shared prototypical exemplars, such as china cups/chashki with handles and glasses/stakany made out of glass. In turn, the placement of paper and plastic containers will vary depending on the language of the task. In the trial that uses English-language labels, the participants will place paper and plastic containers into the category of 'cups'. In the Russian-language trial, the same objects would be placed into the category of 'stakany' […] we cannot assume that all bilinguals will categorize paper and plastic containers in accordance with the constraints of the respective languages. In an English-language trial, L1 Russian-dominant bilinguals may place these containers into the category labeled 'glasses', rather than 'cups', and thus display L1 conceptual transfer. (Pavlenko 2009: 131–132)

It cannot escape notice that the above procedure is concerned with the process of linguistic rather than conceptual categorization. Commenting on the example,

Daller et al. (2011: 5) observe that the information it provides does not allow them "to establish […] whether the speaker's inventory of mental concepts has been affected." Nevetheless, Pavlenko argues that it is crucial to distinguish between the transfer of categorization patterns and of those arising from incorrect lemma-lexeme mappings in cases when at least one of the words involved is either a polyseme or a homonym. Categorization errors are believed to have a conceptual underpinning, while mismatches involving lemma-lexeme mappings are semantic in character (Jarvis and Pavlenko 2008, see Section 1.5.1).

An alternative view derives from the Linguistic Relativity Hypothesis and posits that it is not possible to attest to any form of linguistic influence on the conceptual level without resorting to non-verbal tests that are free from the bias of linguistic processing. This is certainly feasible for perceptible entities, such as cups and glasses whose mental representations may be accessed through designs that do not rely on linguistic categorization. The representations of abstract or imperceptible concepts, by contrast, tend to be investigated via language which plays a crucial role in their acquisition, development and activation, thus constituting the most direct access route to them (see Chapter 3). Evidence of linguistic effects at the conceptual level could be obtained from an intra-language analysis of verbal and non-verbal data, the latter being capable of revealing whether non-verbal behaviour mirrors linguistic patterns (Sachs and Coley 2006). If the results are congruent, the analysis will provide support for linguistic relativity. If, on the other hand, they differ significantly, they will testify to the independence of the semantic and conceptual levels. Alternatively, one could compare non-verbal categorization patterns in speakers of semantically and/or syntactically diverse languages. A lack of differences in this area would be strongly indicative of a dissociation between the semantic and conceptual domains. Finally, the inclusion of bilingual subjects in the research could show whether the use of an additional language affects non-verbal categorization, and to what extent. Initial findings point in the direction of differences between bilinguals and monolinguals, lending support to the possibility that conceptual representations are adaptable and that language could be an instigator of conceptual change. To exclude cultural influences, the research should be conducted in a culturally homogeneous setting (Ameel et al. 2005).

In the author's opinion, it is the relativistic position that provides a more comprehensive framework for the evaluation of the CTH. Consequently, the study seeks to establish linguistic patterns in the L1 and L2 and investigate how they are used by monolinguals and bilinguals in specific contexts. The second objective is to ascertain the extent to which semantic categories influence both verbal and non-verbal categorization, and thus detect potential relativistic effects. This in turn will provide a basis for an evaluation of the CTH's claims that verbal categorization reflects patterns at the conceptual level. Since the investigation is concerned with an abstract concept of friendship, the tests used in the research use linguistic prompts. In line with the recommendations put forward in Chapter 3, none of the tasks

contain any of the targeted lexemes. Contextual backup is provided to specify the semantic properties of the elicited items and activate the underlying conceptual scaffolding.

4.1. Naming interpersonal relationships in Polish and English

The analysis of friendship vocabulary in Polish and English is undertaken in the context of Wierzbicka's (1997) discussion of cultural contrasts in the area of interpersonal relationships. Wierzbicka argues that such contrasts are incorporated into the semantic and conceptual structure of the lexicon. Thus, to obtain insight into how word meanings reflect extra-linguistic reality and investigate the conceptual/semantic make-up of words, it is necessary to resort to the Natural Semantic Metalanguage (NSM, see Section 1.4), which is composed of semantic/conceptual primes and hence may serve as a medium for conveying conceptual content via linguistic frames. Accordingly, under this approach, word meaning is represented by an NSM paraphrase termed an *explication*. The structure of the explication reflects the structure of the thought evoked by the word in question. Explications specify the essential features of the denotation, together with its connotational aspects. Of significance to the present study is that the explications for friendship words contain prototypical cognitive scenarios or scripts that are assumed to show the thinking behind particular words, and thus constitute a window onto the conceptual level. They also provide much more information than traditional dictionary entries. This is what makes them useful for cross-linguistic analyses of word meanings and related concepts. It must be borne in mind, however, that the approach is derived from a position advocating the unity of the semantic and conceptual levels (see Section 1.1.1). It is the conviction that words reflect concepts that aligns the NSM with the Conceptual Transfer Hypothesis (see Chapter 3).

Presented below are the explications for the main friendship words in Polish and English, together with a commentary on their semantic/conceptual scope and usage. Since each explication constitutes a conceptual/semantic template for the word concerned, it effectively highlights the differences between particular words, both within and across the bilingual's lexicons.

Friend

Wierzbicka (1997) is of the opinion that the meaning of the word *friend* has been devalued and broadened in scope in modern times. Therefore, she draws a distinction between the old meaning which emphasizes the intimate character of friendship, its exclusiveness, warmth, trust, benevolence and reciprocity, and the new one that conveys an idea of enjoyment and fun derived from an experience of doing things together. Since the new meaning of *friend* has become dominant in modern English, for the past 100 years, native speakers of English have increasingly

been using the expression *close friend*[1] to refer to a person with whom they have an intimate friendship. *Close friend* signals a different kind of relationship and does not have the same semantic range as *friend*. An alternative expression indicating the most exclusive type of relationship is *best friend*, but apparently "in modern English even a person's 'best friends' can be quite numerous" (Wierzbicka 1997: 36).

To portray the two meanings of *friend,* Wierzbicka (1997: 52) proposes the following explications:

Friend (old)
Everyone knows: many people think about some other people like this:
I know this person very well
I think good things about this person
I want this person to know what I think
I want this person to know what I feel
I don't want many other people to know these things
I want to do good things for this person
I know this person thinks the same about me
When I think about this person, I feel something very good
I think like this about this person

Friend (new)
Everyone knows: many people think about some other people like this:
I know this person well
I want to be with this person often
I want to do things with this person often
When I am with this person, I feel something good
I think this person thinks the same about me
I think like this about this person

Colleague

In comparison to *friend,* the word *colleague* is definitely less frequent and restricted in range because it tends to be used in connection with professional circles only. As a result, it has elitist connotations and signifies professionalism and expertise which command respect. It does not imply familiarity or affection, nor indeed personal contact with the individuals concerned. Because it refers to relations that exist in the present, colleagues from the past are *former colleagues*. The explication for *colleague* (Wierzbicka 1997: 91) displays the following semantic components of the word:

[1] In the Corpus of Historical American English *close friend* appeared 9 times in the 1890s, 99 times in the 1970s and 109 times in the 2000s. The Corpus of Contemporary American English (1990–2012) lists 1747 examples of *close friend* and 72,758 examples of *friend*. *Colleague* and *colleagues* appear 6,246 and 22,112 times, respectively.

Colleague
I think about these people like this:
these people are people like me
these people do things of the same kind as I do
not many other people do things of this kind
I think something good about these people
I think these people know a lot about some things
because of this, these people can do things of this kind
I think these people think the same about me

Acquaintance
Wierzbicka (1997) does not offer an explication for *acquaintance* but only mentions that the word is rare,[2] even marginal, and applies to relationships that are not close. The word may also imply the existence of barriers between people who do not know each other well. This is reflected in the available online dictionary definitions,[3] all of which centre on casual social contact. Some of them include:

Acquaintance
a person you have been in contact with
a person you have met but do not know very well
a person you know less well than a friend
a person who is not a friend but is not a stranger either.

Expressions such as *to have a nodding, passing, slight acquaintance with someone* confirm that the relationship involves little familiarity and limited contact.

Przyjaciel/przyjaciółka
The Polish word *przyjaciel* denotes a very close relationship based on trust, intimate communication, reciprocity and affection. Hoffman (1989, cited in Wierzbicka 1997: 92) speaks of "strong loyalty and attachment bordering on love" which are ingrained in the word's semantic composition. Consequently, *przyjaciel* is expected to offer help in times of need, a sentiment expressed in the proverb *Prawdziwych przyjaciół poznaje się w biedzie* 'A friend in need is a friend indeed'. Wierzbicka (1997) believes that readiness to help is a consequence rather than the basis of the relationship, however. Hence, the explication she suggests (1997: 93–94) runs as follows:

Przyjaciel/przyjaciółka
Everyone knows: many people think about some other people like this:
I know this person very well

[2] The Corpus of Contemporary American English lists only 2,169 uses of *acquaintance* and 1,624 uses of *acquaintances*.

[3] In a personal communication via email, Wierzbicka (2011) stated that she did not know of any explications of the word *acquaintance* in the existing literature.

I think good things about this person
Often when I think something, I can't say it to other people
I can say it to this person
I want this person to know what I think
I want this person to know what I feel
I think this person thinks the same about me
I think like this about this person
I don't think like this about many other people
When I think about this person, I feel something very good.

The word tends to be translated into English as *friend*, but the explication makes it obvious that it corresponds to the old meaning of the word more closely than to the new one. The nearest modern equivalent seems to be *close friend*.

Kolega/koleżanka
The popular perception of *kolega* is that it embraces relationships formed at school, university or the workplace as a result of engagement in the same activities within the same institutional framework. This shared experience has an egalitarian undertone as *kolega* implies equal status within a certain social group. It also conveys warm feelings and a sense of familiarity that result from engagement in the same social routines. Even though such relations do not last forever, the word indicates a certain permanence because *kolega* embraces both present and past experiences, as exemplified by *kolega ze studiów* 'university kolega' or *koleżanka z przedszkola* 'kindergarten female kolega'. Wierzbicka's (1997: 88) explication for *kolega* enumerates the following semantic components of the word:

Koledzy (plural)
Everyone knows: many people think about some other people like this:
These people are like me
I know these people well
I do many things in one place
These people are often in the same place
These people do the same things as I
I think these people think the same about me
When people think like this about other people, they feel something good
I think like this about these people.

A quick web search has revealed that *kolega* tends to be linked to a number of translation equivalents in English, the most common of them being *colleague*, *comrade*, *companion*, *associate*, *friend*, *chum*, *mate*, and *buddy*.

Znajomy/znajoma
Since *znajomy* is derived from the verb *znać* 'to know', the most obvious association is that the word signifies a person that one knows. Based on its collocations and quotations from literature, Wierzbicka (1997) shows that the word denotes much more than mere familiarity, as it tends to refer to people who are known quite well and with whom one has forged a bond, albeit of a social and rather formal nature. The latter is made evident by the application of the honorifics *Pan/Pani* to address *znajomy*, and by the fact that it pertains to relationships formed by adults. Also inherent in its meaning are reserve, distance, and willingness to talk, though not without a limit on what one is willing to say. On the whole, however, the word exudes warm feelings which arise from conversational contact. What follows is an explication for *znajomi* (Wierzbicka 1997: 97) featuring most of these characteristics.

Znajomi (plural)
Everyone knows: many people think about some other people like this:
I know these people well
I don't want to say: very well
I can say things of some kinds to these people
I don't want to say things of some other kinds to these people
when I say things to these people, I often feel something good
I think these people think the same about me
I think like this about these people

The word is translated into English as both *friend* and *acquaintance* because it covers the ranges of both words, as shown by the relevant explications. It is much more frequent than *acquaintance*, though.

The wealth of semantic detail contained in the above explications may prove useful in analyses of patterns of verbal categorization, both within a language and across languages. Moreover, since each explication constitutes a template for the related concept, it could act as a basis for scenarios activating the targeted concepts, by analogy to Coley and Sachs (2006). This in turn could shed light on the range and intensity of semantic transfer between languages and on the conceptual underpinning of the process.

4.2. Study 1a

The study presented below has a linguistic character, in line with the assumptions of the Conceptual Transfer Hypothesis. Accordingly, the focus is on linguistic categorization patterns in the realm of friendship terminology, as exhibited by bilingual and monolingual Polish and English users, and on related cross-linguistic operations within the bilingual lexicon. Following Malt and Ameel (2011), a lexical

or semantic category embraces those relationship scenarios that have been called by the same name, while naming is understood as a process of classifying scenarios to a matching lexical (semantic) category. An alternative term to naming is linguistic categorization.

4.2.1. Research questions

The study aims to obtain answers to the following questions:

1. Do advanced L2 English users' naming (categorization) patterns in English differ from those of English monolinguals? If so, what is the extent and nature of the differences?
2. Do L1 Polish naming patterns have a significant impact on the use of L2 English semantic categories by Polish-English bilinguals?
3. Do advanced L2 English users' naming (categorization) patterns in Polish differ from those of Polish monolinguals? If so, what is the extent and nature of the differences?
4. Do L2 English naming patterns have a significant impact on the use of L1 Polish semantic categories by Polish-English bilinguals?
5. Does the context of L2 learning and use have an impact on categorization patterns in the languages of bilinguals?
6. In addition to contextual issues, what other background factors influence bilinguals' naming preferences?
7. What cross-linguistic processes underlie categorization in the languages of bilingual individuals?
8. To what extent are the observed linguistic naming patterns informative of the underlying conceptual representations?

4.2.2. Participants

The study was conducted on four groups of subjects: 30 Polish university students of English (English Philology) who were taught through the medium of English (henceforth the students), 30 Polish immigrants to Britain and Ireland (henceforth the immigrants), 30 Polish monolinguals and 30 English monolinguals. The last two groups functioned as control groups. In the study, the term *bilinguals* is used to refer to individuals who use two languages regularly in their daily lives, irrespective of whether the languages are used predominantly in an academic or natural setting. Individuals with more than minimal proficiency in a third language were excluded from the research on the grounds that an additional language might affect categorization in the L1 and L2.

The students (N = 30, ages 20–25, mean = 22.5) were Polish nationals and third-year students of English at the English Department of the University of Silesia.

Their proficiency in English was relatively high, i.e. it spanned the B2 level (N = 8), as well as the C1 (N = 17) and C2 levels (N = 5), with the average score of 50 points (the C1 level, see Section 4.2.3). The students stated that they had beginner to elementary competence in a third language, which included German (N = 24), French (N = 2), Russian (N = 2), and Spanish (N = 2). None of them had stayed in an English-speaking country longer than a month. All of them were taught through the medium of English (N = 30), and read literature (N = 26) and watched TV (N = 22) in both Polish and English. However, in comparison to the immigrant sample, the students were visibly deprived of opportunities to use English for communication because the majority score for this variable was either 10–15 hrs a week (N = 12) or less than 10 hours a week (N = 11, SD = 0.9). This is not to say that they did not spend time improving their skills in the language. Most of them stated that they spent more than 16 hours (N = 13) or 11–15 hours a week (N = 8, SD = 0.98) on L2 study. The answers were less varied for the use of Polish, with 23 subjects choosing the *more than 30 hours* option (SD = 0.59). Nevertheless, Polish was spoken at home (N = 28), while both Polish and English were used for interaction with friends in 60% of cases (N = 18).

The immigrants were Polish nationals (N = 30, 4 males, 26 females, aged 20–40, mean = 30) residing in the Republic of Ireland (N = 11) and in the UK (N = 19). All of them met the minimum length of stay requirement, which was 2 years in an English-speaking environment (mean = 3.3, range 2–10 years, SD = 1.79). All of them had studied English as a foreign language in Poland. Twenty eight participants had a university degree, i.e. either the BA (N = 12) or the MA (N = 16). Two subjects were university students. The participants' proficiency in English spanned three levels: B2 (N = 11), C1 (N = 10), and C2 (N = 9), with the average score of 51 points (the C1 level, SD = 5.66). They claimed to have a limited knowledge of a third language, such as French (N = 5), Spanish (N = 2), German (N = 10), and Russian (N = 10), which they had not used for some time. As regards L1/L2 use, the majority used English for more than 30 hours a week (N = 21, SD = 0.86). Communication in Polish was definitely less intense, with only 9 subjects (N = 9, SD = 1.19) using the language for over 30 hours a week. The language spoken at home was predominantly Polish (N = 22), while English was used at work (N = 25) and school/university (N = 25). Literature was read in both languages (N = 24) or solely in English (N = 6). Less than a half of all immigrants (N = 13) watched only English-speaking TV stations, with the remaining participants alternating between Polish- and English-speaking channels (N = 15). Two individuals did not watch TV at all. Most of the immigrants were paid €20/£15 for their participation in the research.

The Polish monolinguals (N = 30, 12 males, 18 females, ages 20–25, mean = 22.5) were geography and biology students at the University of Silesia with either beginner (N = 15) or elementary (N = 15) knowledge of L2 English or any other foreign language. At university they had 2 hours of English per week. None of the monolinguals had stayed in an English-speaking environment for longer than a month.

The English monolinguals were mainly Irish residents (N = 24). They included staff at Trinity College Dublin (TCD) and TCD Library (N = 18), as well as a number of TCD students (N = 6). Five respondents were English and students at London University and 1 was an American university lecturer. Overall, there were 10 men and 20 women between the ages of 18 to 65 (mean = 37.8) in the sample group. They completed the relationships questionnaire in the researcher's presence in Dublin and London. All of the respondents had university degrees and a minimal knowledge of a language other than English.

4.2.3. Materials

The materials used in the study included a set of scenarios, each of which created a context that was intended to activate the targeted meaning and related concept (Test 1, see Appendix). Each scenario was built around the semantic components of an NSM explication. As explained in Section 1.4, explications are instrumental in constructing precise semantic/conceptual frames for specific lexical items. The study focused on 6 words, 3 of which were Polish, i.e. *przyjaciel*, *kolega*, and *znajomy*. The remaining 3 words were their nearest English equivalents, i.e. *friend*, *colleague* and *acquaintance*. There were also two distractors, i.e. *sąsiad* 'neighbour' and *buddy*/*pal*.

Two language versions of the scenarios were used: an English version and its translation into Polish. Since the language of the explications was English NSM, it determined the choice of language for the master version. The translation into Polish was done by the researcher who is a native speaker of Polish. Both versions were proofread by monolingual native speakers of the respective languages. The accuracy of the translation was checked by a fellow researcher who was a Polish-English bilingual. For stylistic reasons, the Polish version was slightly altered. The revisions did not result in a loss of semantic equivalence.

The participants were instructed to write down the word(s) they would use to name their relationship with the individual(s) described in each scenario (Test 1). The relationship was not romantic and they could use the same word several times to refer to different scenarios, or use two different words to refer to the same situation.

Presented below is a list of the scenarios arranged by the targeted words, together with their semantic components, as specified by the relevant NSM explications (Wierzbicka 1997). In the questionnaire, the scenarios were presented in a randomized order which is indicated by the letter S for scenario and the entry number. The participants were expected to provide the target word in response to the prompt: *This person is a(n)…* or *These people are (my)…*

Przyjaciel

> (S3) We went to school together and lived in the same street. On Saturdays we would first meet in the playground, and then, a few years later,

on the tennis court. Now we often go to our local for a chat. There isn't a thing we wouldn't know about each other.

Semantic components: I know this person very well, I want this person to know what I think, I want this person to know what I feel, when I think about this person I feel something very good.

The scenario introduces an additional element of continued long-term contact, which is believed to result in close familiarity and positive feelings.

(S11) We often talk on the phone or on the Net. Our conversations are very honest and deep; sometimes they remind me of going to confession.

Semantic components: often when I think something, I can't say it to other people, I can say it to this person, I want this person to know what I think, I want this person to know what I feel.

(S18) She/he helped me to move house and collected me from the airport when my plane flew in at 5 a.m. I really don't know how I would have managed without his/her help.

Semantic components: I think good things about this person, when I think about this person, I feel something very good, I don't think like this about many other people.

This scenario additionally contains a feature related to the willingness to provide help, which is part of the old meaning of *friend,* a close equivalent of *przyjaciel*. The need to include the component became obvious during the piloting phase of the study.

(S16) She/he is one of the few people I trust and often discuss my problems with. I admire his/her experience and disinterested wisdom.

Semantic components: I think good things about this person, often when I think something, I can't say it to other people I can say it to this person, I want this person to know what I think, I want this person to know what I feel, when I think about this person I feel something very good.

Znajomy/znajoma

(S8) We meet when walking our dogs and often have a chat, while our pets chase each other on the grass. This is how I hear the news about the people living in the area.

Semantic components: I know these people well, I don't want to say: very well, I can say things of some kinds to these people.

(S15) Our kids are classmates and we often meet at parents' meetings or when collecting them from school. Sometimes, when I have to work overtime, she/he walks my son home for me.

Semantic components: I know these people well, I don't want to say: very well.
The scenario also stresses the existence of a bond that manifests itself as a willingness to do favours for the person concerned.

(S21) Although I've known her for some time I'm not sure if I can trust her. I enjoy talking to her. Occasionally, I even invite her to my place for coffee. Still, I feel a sense of distance from her.

Semantic components: I know these people well, I don't want to say: very well, I can say things of some kinds to these people, I don't want to say things of some other kinds to these people, when I say things to these people I often feel something good.

Kolega/koleżanka

(S22) We are classmates and often stay after school to do our homework together. There are five of us in all and we enjoy studying together.

Semantic components: these people are like me, I do many things in one place, these people are often in the same place, these people do the same things as I, I think these people think the same about me, when people think like this about other people they feel something good.

(S6) For five years, we have been meeting at university where we do the same degree course. We sometimes study for exams together and in our free time, i.e. quite rarely, we go to the cinema.

Semantic components: these people are like me, I know these people well, I do many things in one place, these people are often in the same place, these people do the same things as I, when people think like this about other people they feel something good.

(S14) For several years we've been going to ski camps together. In fact, all of us started from scratch and had many adventures on the ski slopes and routes. We enjoy skiing together.

Semantic components: these people are like me, I know these people well, I do many things in one place, these people are often in the same place, these people do the same things as I, when people think like this about other people they feel something good.

Friend

(S10) We met at university and straight away discovered that we had a lot in common. We understand each other perfectly and have fun together, even though we don't do anything special, e.g. crack jokes and play chess.

Semantic components: I know this person well, I want to do things with this person often, I want to be with this person often, when I am with this person I feel something good, I think this person thinks the same about me.

(S2) We share many interests, e.g. we both love hiking. Every month or so, we go to the country to relax and hike in the area. Sometimes we do this more often.

Semantic components: I know this person well, I want to be with this person often, I want to do things with this person often, when I am with this person I feel something good.

(S7) I relax in his/her company. It's amazing that two so noticeably different personalities are able to have such a good time together. To my satisfaction, I've discovered that the affection is mutual.

Semantic components: I want to be with this person often, when I am with this person I feel something good, I think this person thinks the same about me.

(S9) I've grown to like our chats and meetings so much that when she/he remains silent for a few days I begin to miss something and reach for the phone.

Semantic components: I want to be with this person often, when I am with this person I feel something good.

Colleague

(S19) I work in a 10-man team where everybody has different tasks and responsibilities. However, I often find that I'm not able to make decisions without consulting the other teammates.

Semantic components: these people are people like me, these people do things of the same kind as I do, not many other people do things of this kind, I think something good about these people, I think these people know a lot about some things.

(S17) I work in a bank as a tax consultant. I still remember my first day in the job when my boss introduced me to all the people employed there. Everybody was very nice and friendly.

Semantic components: these people are people like me, these people do things of the same kind as I do, I think something good about these people, I think these people think the same about me.

(S20) I work in higher education. I've been asked to give a lecture in the absence of a lecturer who had an accident and was taken to hospital.

Semantic components: these people are people like me, these people do things of the same kind as I do.

Acquaintance

(S1) We met last week at a party where someone suggested going on a group trip to Greece. We are leaving this coming Friday.

Semantic components: a person you have been in contact with, a person you have met but do not know very well, a person you know less well than a friend, a person who is not a friend but is not a stranger, either.

(S4) We were introduced to each other at a residents' committee meeting a few weeks ago. I sometimes bump into him/her at the train station while on my way to work.

Semantic components: a person you have met but do not know very well, a person who is not a friend but is not a stranger, either.

(S13) We met at a conference where we were seated next to each other at the conference dinner. After an interesting conversation we exchanged business cards.

Semantic components: a person you have met but do not know very well, a person who is not a friend but is not a stranger, either.

Pal/buddy (a distractor item)

(S12) There are several of us in the area. We have fun together and often spend our free time going to our local (pub) for a beer.

Semantic components: exclusive relationship based on personal preferences and restricted to few participants (Wierzbicka 1997: 87).

Neighbour (a distractor item)

(S5) We live in a house on the city outskirts. The couple next door are very friendly and we often help each other. For example, last summer I watered their garden when they went on holiday.

Test 2 (see Appendix) was a verbal categorization task aimed at finding out how the participants perceived the scenarios. This was vital in clarifying the nature of the relation signified by each of the friendship terms and identifying the scope of differences, if any, among the researched populations. Furthermore, the data shed light on whether the differences in the lexical choices in each language were linked to differences in the appraisal of the situations. Consequently, the participants were required to assign a corresponding scenario number to one of the following categories:

a) very close and personal relationships,
b) close but not intense, also professional relationships,

c) purely social relationships,
d) purely professional relationships.

A questionnaire (see Appendix) was used to determine the language and educational background of the respondents. The monolinguals answered questions about their sex, level of education, profession, country of residence, and knowledge of languages other than their L1. They were also asked to rate their level of proficiency in these languages and to state whether they spoke and/or studied any of them regularly. Apart from providing background information, the questionnaire was used as a screening tool to identify subjects with both a minimal knowledge of an L2 and university education. Individuals who met this criterion were subsequently recruited for the study. The bilinguals, in addition to questions about current residence and knowledge of languages other than Polish and English, were also asked to supply information about factors assumed (Pavlenko 2011b) to play a significant role in the achievement of monolingual naming standards. They included the length of stay in an English-speaking country, as well as the context and patterns of L1 and L2 use. Accordingly, the questions focused on the number of years in an L2-environment, on the approximate amount of L1 and L2 use per week, on contexts such as family and friends, work and school/university, and L2 instruction, including self-study, reading, and television. In the case of L2 learning, the respondents were required to select one of four categories that realistically reflected the amount of time they spent improving their English skills, both in a formal context and through private study. The categories included in the question were adjusted to various forms of language education, such as evening language courses offering one or two 90-minute classes per week, and more intensive forms of training with classes held every day, as is the case with university English degree courses. The suggested ranges also covered self-study required for successful completion of homework assignments. The question read as follows:

> In a week, I study/work on my English:
> (a) 3 hours and less (≤ 3 hrs),
> (b) 4–10 hours,
> (c) 11–15 hours,
> (d) 16 hours and more (≥ 16 hrs).

As regards the amount of L1 and L2 use, the questions were modelled on Laufer (2003: 23):

> In a week, I use English/Polish
> (a) less than 10 hours,
> (b) 10–15 hours,
> (c) 16–30 hours,
> (d) more than 30 hours.

The bilinguals selected for the study were to meet the following criteria:

a) minimum length of stay in an English-speaking country: 2 years;
b) educational background: university graduates and/or students;
c) minimal knowledge of an L3;
d) advanced proficiency in L2 English, i.e. the B2 level and above.

The Oxford Quick Placement Test (2001), paper and pen version, was administered to all of the bilingual participants to assess their level of proficiency in L2 English. The test score is expressed as a band on the Common European Framework scale.

4.2.4. Procedure

The Polish and English versions of the questionnaire were piloted on 5 native speakers of the respective languages. These individuals were not included in the sample. The English version was completed online, while the Polish one was completed in the researcher's presence. The pilot study revealed the necessity to modify the template for Przyjaciel, as explained in Section 4.2.3.

During the study proper, the English monolinguals were tested individually by the researcher. After completing the friendship questionnaire, they were asked to answer a few background questions in writing. The Polish monolinguals were tested during two 30-minute sessions held at the Biology and Geography Departments. Towards the end of the session, they completed the language background questionnaire. Data collection was implemented in Dublin and London in April and December 2008. In Poland, the testing sessions took place in May 2008.

The students first took the *Oxford Quick Placement Test* (2001), paper and pen version, which assessed their L2 English ability in areas such as grammar and vocabulary, as well as basic reading. Since all of the students at the English Department are regularly assessed in terms of proficiency, it was not deemed necessary to combine the test score with other forms of assessment to obtain a more complete picture of the participants' knowledge of L2 English. Another function of the placement test was that, together with the background questionnaire, it was used to single out students who did not meet the selection criteria. The friendship questionnaire was administered in two separate sessions spaced two weeks apart. Because the students were formally members of two classes, the language order for each class was reversed, i.e. if one group completed the Polish version of the questionnaire, the other was given the English one. The following week each group received the version it had not completed. The students did not know in advance that they would be tested. They did not know that they would be expected to complete two versions of the questionnaire, either. To control for language mode effects (Grosjean 1998, 2001), each session was conducted in the language of the questionnaire.

The immigrants were tested individually by the researcher at two testing sessions. The language order of the sessions was randomized; that is, if the conversation naturally opened in Polish, the subjects were given the Polish versions of the friendship and background questionnaires. The following week they completed the questionnaires in English and took the placement test, and vice versa. The sessions were at least 5 days apart and every effort was made to control for language mode effects, i.e. the language spoken throughout each session was the language of the questionnaires. The decision to restrict the assessment of proficiency to a grammar and vocabulary test was motivated by the fact that over 50% (N = 16) of the respondents were students at Irish or English universities where the required level for admission was the C1 band. The remaining individuals had jobs requiring good communication skills; that is, they were teachers, museum guides, secretaries, and receptionists, which was evidence of their proficiency in English. The subjects were not informed about the focus of the study and were paid for their participation. The data were collected during study visits to Dublin and London in April and December 2008.

4.2.5. Analysis

The scenarios used in this study provided categorical data in the form of words that were subsequently coded as numbers, starting with '1' for *friend* and continuing until all of the noun types elicited through the questionnaire were labeled with a successive number. The data collected in Polish and English were coded separately, in accordance with the language of the dataset. To ensure data comparability across same-language samples, i.e. English monolinguals, immigrants tested in English and students tested in English, the same nominal scale was used for all three samples within a language group. The procedure was repeated for Polish.

Despite being allowed to use more than one term, the vast majority used only one noun that was often accompanied by a modifying adjective. The modifiers were recorded but were not considered crucial to the analysis, except for references to close friendship in English. In the few cases where more than one noun was given by the respondents, only the first one was considered. There were no diminutives in the dataset.

In Test 2, each of the four categories was assigned a number from 1 to 4, and each scenario classified as a member of a specific category was labelled with the category's number, e.g. '1' for scenarios perceived as signifying *very close and personal* relationships. In a few cases, the respondents skipped one or more scenarios during the classification process. Such scenarios were excluded from the analysis.

Tests 1 and 2 provided categorical data which were analysed statistically using the following tests:

a. To determine the frequency of use of particular friendship terms in each participant group, a general word frequency count was implemented. Between-

group differences with regard to the usage of the terms were analysed with the chi-square test of independence. Moreover, descriptive statistics were computed for each of the variables considered in the analysis.

b. To see how the name distribution patterns obtained for each scenario compared across the same-language groups, the answers to each scenario were juxtaposed against their equivalents in the remaining groups and analysed statistically using the Fisher exact test. The test was applied because some of the observed frequencies were less than 5. The following comparisons were computed for each language: monolinguals vs. immigrants, monolinguals vs. students, and students vs. immigrants.

c. To establish whether the obtained contrasts in naming preferences derived from differences in how the respondents perceived the scenarios, the results of Test 2 were analysed with the Fisher exact test.

d. To measure the strength of the association/dependency between the compared variables, Cramér's V was calculated.

e. To compare the language results of the immigrant and student samples and see if they had been influenced by the context of L2 use, an independent samples t-test was run. It compared the means of the following variables: proficiency test scores, agreement with Polish monolinguals and agreement with English monolinguals by person, as well as agreement with Polish monolinguals and agreement with English monolinguals by scenario.

f. To find out which semantic features constituted the categories' cores, a median split procedure was performed. This identified scenarios with the highest score within each lexical category. The scenarios were then analysed in terms of their semantic composition.

In the background questionnaire, the questions concerned with the length of L2 study and L1 and L2 use received from 1 to 4 points, depending on the answer given, i.e. from (a) to (d). Information about the bilinguals' proficiency was presented as a score on the placement test, while "agreement with English/Polish monolinguals" was defined as the number of times each bilingual provided a scenario response that was the same as one of those offered by the monolinguals in the control groups, excluding the outliers. The questionnaire provided continuous and ordinal data which lent themselves to analysis by the following tests:

a. The Shapiro-Wilk test to check for normality of data distribution.

b. The Pearson product-moment correlation coefficient (r) to check for correlations between normally distributed variables; the non-parametric Spearman rank-order correlation coefficient (rho) was applied to check for correlations that failed to meet the normality assumption.

c. Simple and multiple regression procedures to assess the extent of interaction between the variables that were significantly correlated.

All calculations were made using PASW Statistics 18.0 and STATISTICA 9 software. The alpha level was set at 0.05 or less.

4.2.6. Results

The results will be evaluated according to four criteria:

First, the naming preferences of the English and Polish monolinguals are examined in terms of the dominant (most frequent) labels for each situation. This offers insight into how monolinguals lexically categorize the stimulus situations and provides grounds for delimiting the referential ranges of the elicited lexical categories. The referential range is understood as the number of situations that have been labelled with the same word. To further specify the word's semantic composition, the word is juxtaposed with its equivalents in the other language, i.e. the dominant names elicited by the scenarios within the word's referential range. Additionally, the results of Test 2 are presented to show how each scenario and the corresponding name have been classed using broader semantic criteria than those laid down by the friendship terms concerned. Test 2 clarifies the character of the relationship represented by each friendship word, making its depiction more accurate. The procedure is repeated for the bilingual participants. The fact that the English and Polish friendship terms examined in this study are not equivalent categories precludes the possibility of direct cross-language comparisons by means of statistical analysis.

Second, because the dominant names approach does not take on board inter-subject variability in naming, Fisher's exact test was run to ascertain objectively the existence of differences among same-language groups. The analysis focused on name distribution patterns produced in response to each scenario within a group. Because the Fisher test compares name distribution patterns without specifying the degree of similarity or difference between them, information on that score is expressed as a percentage of statistically similar scenarios divided by the total number of scenarios and multiplied by a hundred.

Third, the dominant names and name distribution matrices provide data on the typicality of the participants' naming choices. To assess their acceptability against monolingual preferences, the bilingual data are evaluated in terms of the degree of agreement with monolinguals by person and scenario. *Agreement with monolinguals by person* is the total of all monolingual-like naming options produced by a particular bilingual. The frame of reference is the set of names produced by monolinguals in response to a particular scenario, excluding the outliers, i.e. items used once or twice. Conversely, *agreement with monolinguals by scenario* specifies the total number of non-monolingual-like responses elicited by each scenario within a particular sample group.

Finally, the section presents frequency data for the targeted categories, evaluating the observed tendencies through statistical analysis and cross-language comparisons.

Following the recommendations of Wierzbicka (1997) and Jarvis and Pavlenko (2008), the undertaken analysis has a linguistic nature. This is because,

as explained in Section 1.4 and Chapter 3, linguistic patterns are assumed to map onto the underlying models in the conceptual structure, and consequently offer insight into extra-linguistic representations. The issue of the interaction between the semantic and conceptual levels is examined in the second part of this study. Since in the most basic sense, the friendship questionnaire is an elicitation tool designed to probe naming patterns, the study is aligned to a recent spate of research on naming in a bilingual context (Malt and Pavlenko 2011; Malt and Ameel 2011). The theoretical perspective adopted in the analysis is that of Cook's (2003) multi-competence theory and Grosjean's (2008) related argument that the bilingual's language system is complete and unique and should not be construed as a set of independent languages.

For stylistic reasons, terms such as *name*, *word*, and *term* have been used interchangeably throughout this study as a substitute for *lexical category*.

English monolinguals

Overall, the English monolingual participants used 28 words, the most frequent of them being *friend* (N = 313), *acquaintance* (N = 95), *colleague* (N = 85), and *neighbour* (N = 50). Nine words were used only once or twice and are therefore regarded as marginal. Because the data showed inter-subject variability, categories were established on the basis of the most frequent, i.e. dominant, word for each scenario. Table 3 below displays the monolinguals' naming preferences, as exhibited in the questionnaire.

Table 3. The results of Tasks 1 and 2 for the English monolingual sample

Dominant word No. of scenarios	Scenario number	Polish composition	Type of relationship
Close friend (N = 4)	3, 7, 16, 18 (≈50% of the score for *friend*)	przyjaciel (N = 4)	very close and personal (N = 4)
Friend (N = 14)	1, 2, 3, 6, 7, 9, 10, 11, 12, 14, 15, 16, 18, 22	przyjaciel (N = 6) kolega (N = 6) znajomy (N = 2)	very close and personal (N = 6) close but not intense (N = 4) purely social (N = 4)
Colleague (N = 3)	17, 19, 20	znajomy (N = 1) kolega (N = 1) kolega/współpracownik (N = 1)	purely professional (N = 3)
Acquaintance (N = 4)	4, 8, 13, 21	znajomy (N = 3) kolega (N = 1)	purely social (N = 3) purely professional (N = 1)
Neighbour (N = 1)	5	sąsiad (N = 1)	purely social (N = 1)

As regards the first category in the table, that of *close friend*, the number of references to close friendship in the entire questionnaire was relatively low (N = 62). These were offered primarily but not exclusively in response to situations that were categorized in Task 2 as *very close and personal* (N = 4). The elicited names included *close friend* (N = 29), *good friend* (N = 22), *best friend* (N = 8), *trusted friend* (N = 3), *very good friend* (N = 1), and *true friend* (N = 1). None of these expressions was the dominant category name but the number of references to close friendship in each of the pertinent scenarios approximated to 50% of the scenario's score. This indicates that, contrary to Wierzbicka (1997), the category of *close friend* has lower linguistic salience than the other terms under investigation, perhaps due to lack of an independent lexeme. The simplified diagrams in Figures 5a and 5b show the breakdown of monolingual lexical choices with regard to the categories of *friend*, *colleague*, and *acquaintance*, and their assumed Polish equivalents.

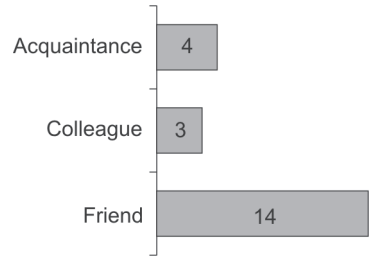

Figure 5a. English monolinguals (dominant word categories)

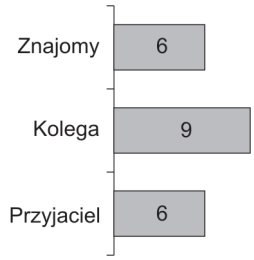

Figure 5b. Polish monolinguals (dominant word categories)

Also, Table 3 makes clear that *friend* is a broad and indeterminate category (Wierzbicka 1997) which encompasses a gamut of relationships ranging from intimate and personal to close but lacking intensity and purely social ones. Semantically, it has the NSM composition of *friend*, *przyjaciel*, *kolega*, *pal*/*buddy*, *znajomy* and *acquaintance*. *Colleague* is restricted to purely professional contexts, while *acquaintance* does not seem as marginal as Wierzbicka suggests since it was used in 4 out of 6 situations targeting *acquaintance* and *znajomy*. This in turn indicates that the two partially overlap. Finally, it should come as no surprise that

acquaintance touches on professional relations in addition to purely social ones, because they often concur.

Polish monolinguals

Quite surprisingly, the Polish monolinguals used fewer words (N = 23) than their English counterparts to refer to the questionnaire scenarios. What is more, 10 words (N = 10) were marginal as they appeared only once or twice in the sample. The most frequent items were *kolega* (N = 216), *znajomy* (N = 192), *przyjaciel* (N = 155), *sąsiad* (N = 28), and *współpracownik* 'co-worker' (N = 20). All of them formed dominant word categories and are presented in Table 4 below.

Table 4. The results of Tasks 1 and 2 for the Polish monolingual sample

Dominant word No. of scenarios	Scenario number	English composition	Type of relationship
Przyjaciel (N = 6)	3, 7, 9, 11, 16, 18	friend (N = 6) close friend (N = 4) friend (N = 2)	very close and personal (N = 5) close but not intense (N = 1)
Kolega (N = 9)	2, 6, 10, 12, 14, 19*, 20, 21, 22	friend (N = 6) colleague (N = 2) acquaintance (N = 1)	close but not intense (N = 3) purely social (N = 3) purely professional (N = 2) very close and personal/ close but not intense (N = 1)
Znajomy (N = 6)	1, 4, 8, 13, 15, 17	acquaintance (N = 3) friend (N = 2) colleague (N = 1)	purely social (N = 4) purely professional (N = 2)
Sąsiad (N = 1)	5	neighbour (N = 1)	purely social (N = 1)
Współpracownik (N = 1)	19*	colleague (N = 1)	purely professional (N = 1)

* Answers equally distributed between two categories.

The category of *kolega* turned out to be the broadest of the three words under investigation. The word was generally used to refer to relations perceived as *close but not intense* (N = 3), *purely social* (N = 3), *purely professional* (N = 2), and bordering on *very close and personal* and *close but not intense* (N = 1). Its most common collocates emphasized both the intensity of the relationship and the fact that it was inspired by a shared institutional membership, as exemplified by the following expressions: *kolega z pracy* '*kolega* from work' (N = 11), *(bardzo) dobry kolega* '(very) good *kolega*' (N = 8), *bliska koleżanka* 'close female *kolega*' (N = 5), *kolega z klasy* '*kolega* from class' (N = 4), and *kolega po fachu* '*kolega* in the same line of work' (N = 1). This makes the word the closest available translation equivalent of *friend,*

even though *friend* does not encompass professional connections. Overall, the data do not confirm Wierzbicka's (1997) premise that *kolega* is constrained by membership in the same institutional framework. On the contrary, its NMS composition suggests (see Table 4) that it extends beyond institutional frames to include social and close but not intensely personal relationships. The answers to Situation 19 suggest that in strictly professional contexts, Poles may resort to the affectively neutral term *współpracownik* 'co-worker' (N = 10).

Przyjaciel in turn refers mainly to *very close and personal* relations (N = 5), as evidenced by the most frequent collocations for this category, i.e. *bliski przyjaciel* 'close friend' (N = 5) and *najbliższy przyjaciel* 'closest friend' (N = 1). There was just one instance of *najlepsza przyjaciółka* 'best female friend' (N = 1) in the monolingual dataset. *Znajomy* is restricted to *purely social* (N = 4) and *professional* (N = 2) contexts, as shown by expressions such as *znajomy z pracy* '*znajomy* from work' (N = 13) and *znajomy z widzenia* '*znajomy* by sight' (N = 4). According to Wierzbicka (1997), *znajomy* may imply the existence of an emotional bond and a degree of closeness. In this connection, the monolingual participants spoke of *dobry znajomy* 'good *znajomy*' (N = 14) and *bliski znajomy* 'close *znajomy*' (n=9). Lack of familiarity was indicated with adjectives such as *daleki* 'distant' (N = 1), *przypadkowy* 'casual' (N = 1), *nowy* 'new' (N = 1), and *początkowy* 'beginning' (N = 2).

In comparison to English, Polish seems to carve up the relationship continuum using criteria based on the intensity of contact and a personal evaluation of the relationship, making contextual concerns a less salient issue. This is not to say that contextual factors are of no relevance. The abundance of qualifying prepositional phrases, such as *z pracy* 'from work' or *ze szkoły* 'from school', which typically collocate with *kolega* and *znajomy*, serves as proof of their status in the semantics of friendship terms in Polish. The emphasis on personal evaluation, on the other hand, results in seemingly contradictory labels such as *bliski znajomy* 'close acquaintance', which are possible but marginal in English. English, by contrast, has a broad term *friend* for relations marked by a degree of familiarity and good will towards the individual(s) concerned. Relationships forged exclusively on professional grounds and limited to social settings, i.e. those denoted by *colleague* and *acquaintance*, bear names that are narrower in scope and consequently appear marginal and rare. Such an interpretation finds support in the frequencies reported for the use of the three terms, with *friend* (N = 313) being over three times more common than *colleague* (N = 85) and *acquaintance* (N = 95). In Polish, the categories seem better balanced, with *przyjaciel* (N = 155) being the least frequent of the three terms (*kolega*, N = 216, *znajomy*, N = 192) on account of the exclusive nature of the relationship it denotes.

Tables 3 and 4 display the English and Polish composition of the terms and show that there is no one-to-one correspondence between the principal friendship words in the two languages ($p = 0.03$, Fisher's exact test). The closest synchrony can be found between *close friend* and *przyjaciel*, providing *close friend* and *friend* are not treated as members of the same category. In the main, all of the terms are partial translation

equivalents exhibiting varying degrees of category nesting, i.e. *przyjaciel* vs. *friend*, and cross-cutting, e.g. *colleague* vs. *znajomy*, *kolega* and *współpracownik* (Malt et al. 2003). This discrepancy in naming is not borne out by the comparison of the Polish and English monolinguals' answers to Test 2, which produced an astonishingly high level of 95% agreement. This shows that the respondents agreed in principle on their appraisal of the situations ($p > 0.05$, Fisher's exact test), regardless of the naming differences between their languages. The sections below examine how partial equivalence between the L1 and L2 influences categorization in the bilingual lexicon.

Polish immigrants tested in English

Tested in L2 English, the Polish immigrant group used 26 words in total, with 8 of them being used only once. The most frequent items were those targeted by the questionnaire; that is, *friend* (N = 291), *colleague* (N = 131), *acquaintance* (N = 66), and *neighbour* (N = 47).

Following in the footsteps of the L1 English controls, the immigrants marginalized the category of *close friend*. It received the highest scores in Situations 3 (N = 11) and 16 (N = 10), but was far from being the dominant name for those scenarios. In the immigrant dataset, *close friend* and *best friend* occurred 19 and 17 times, respectively. There were also instances of *a close friend of mine* (N = 4), *soul friend* (N = 3), *very close friend* (N = 4), and *closest friend* (N = 1). Twelve out of 30 immigrants did not refer to the category at all. In total, the immigrants invoked close friendship 48 times, that is, less frequently than the English monolinguals (N = 62).

Table 5. The results of Tasks 1 and 2 for the Polish English bilingual sample (immigrants)

Dominant word No. of scenarios	Scenario number	Monolingual English composition	Type of relationship
Close friend	3, 16	close friend (N = 2)	very close and personal (N = 2)
Friend (N = 14)	1, 2, 3, 6, 7, 9, 10, 11, 12, 14, 15, 16, 18, 22	close friend (N = 4) friend (N = 10)	close and personal (N = 6) close but not intense (N = 3) purely social (N = 4) very close and personal/close but not intense (N = 1)
Colleague (N = 4)	13*, 17, 19, 20	colleague (N = 3) acquaintance* (N = 1)	purely professional (N = 4)
Acquaintance (N = 4)	4, 8*, 13*, 21	acquaintance (N = 4)	purely social (N = 3) purely professional (N = 1)
Neighbour (N = 2)	5, 8*	neighbour (N = 1) acquaintance (N = 1)	purely social (N = 2)

* Answers equally distributed between two categories.

As regards dominant category names, *friend* (N = 14) did not differ from the English monolingual data. Likewise, *colleague* was used mainly as a label for *purely professional* relations. In some cases, however, it was clearly influenced by the semantics of *kolega*, as manifested by references to a shared institutional membership, i.e. *school colleague* (N = 3), *work colleague* (N = 7), *colleague from work* (N = 5), and *colleague from university* (N = 1). *Acquaintance*, in principle, did not diverge from the English monolinguals' preferences, both in terms of the number of dominant names and in that it denoted mainly *social* connections (see Table 5).

A significant difference from the L1 English speakers was found in the overall use of the three terms. As Figure 6 (see p. 143) demonstrates, the immigrants were more willing than the English monolinguals to apply *colleague* (N = 131 and N = 85, respectively), also in situations unrelated to professional settings. *Acquaintance,* by contrast, was used sparingly in comparison to the English respondents (N = 66 and N = 95, respectively). *Friend* was also less frequent (N = 291, as opposed to N = 313 for the native speaker group). The difference is statistically significant ($x^2 = 15.8$, $df = 2$, $p = 0.000$, $V = 0.13$). These results reveal at least two distinct processes at work, namely, category expansion, which manifests itself as the overuse of *colleague* motivated by the semantic constraints of *kolega*, and category narrowing, exemplified by the minimal use of *acquaintance*. Although the study does not explore the rationale behind categorization choices, informal conversations with some of the participants at the completion of the study revealed that they considered *acquaintance* to be rare and avoided it accordingly. Evidently, this was not a factor for the English monolinguals who were happy to use it in a more formal research context.

The dataset included a few isolated cases of misnomers; that is, lexical items that were either non-existent in English, e.g. **study mate* (N = 1) and **party mates* (N = 1), or seemed to be calques from L1 Polish, i.e. *master* 'mistrz' for a *close friend* (N = 1) and *group* (N = 2) for *friends*/*buddies*. On the whole, however, the immigrants did not take chances and provided answers well within the English monolingual range. This does not mean that the answers were in complete agreement with those of the L1 English respondents. The Fisher exact test showed a discrepancy between the English native speakers' word choices and those of the Polish bilinguals in Situations 1, 6, 11, 12, 14 and 16.[4] All of them targeted the category of *friend*, which was also their elicited dominant name. Nevertheless, a shared dominant name did not preclude differences in the name distribution patterns for the scenarios. This can best be seen in S1, where both the English monolinguals and immigrants opted for *friend* (N = 13 and N = 11, respectively), and *acquaintance* (N = 11 and N = 8, respectively), the NSM target. What made the immigrants' responses diverge from those of the L1 English speakers (p = 0.01, Fisher's exact test, V = 0.48) was the use of *mates* and **party mates* (N = 6 and N = 1, respectively), *colleague* (N = 3), and two other outliers that did not figure in the monolingual list. A word used exclusively by the

[4] $p < 0.05$, Fisher's exact test, $V > 0.4$.

monolinguals was *companion* (N = 5). These responses show that contrasts in group behaviour do not necessarily derive from contrasting dominant names, but instead reflect the preferences of a minority that is sizeable enough to influence the response pattern of the entire group. In this connection, mention should be made of the tendency exhibited by the immigrants to label as *mates* their companions on trips abroad, drinking sprees or skiing trips. *Mate* constituted a significant proportion of answers in S1, S12 and S14 (N = 6, N = 9 and N = 11, respectively), which centre on the theme of shared adventure and/or activity. This may explain why it was a parallel dominant name (*friend*, N = 9, *mate*, N = 9) for S12 targeting *pal*/*buddy*, and the origin of **party mates* and **study mates* (N = 1). In S14 referring to participation in ski camps, *mate* presents itself as a second word of choice (N = 11) and an alternative to *friend* (N = 15). The English monolinguals, by contrast, used the word rarely, with the highest score of 4 in S12.

Another aspect worthy of note is the use of L1 loanwords which, encouraged by phonetic similarity, map L1 meanings directly onto their assumed L2 equivalents. A case in point is the use of *colleague* to name relationships that do not have a professional basis. This was observed mainly in S6, where *friend* (N = 10) and *colleague* (N = 9) were on a par. The situation targeted the Polish word *kolega.* In S12, the immigrants used *colleague* four times (N = 4). Since the native speakers of English applied the word only once to refer to the scenarios, these results demonstrate the workings of transfer from L1 Polish. Moreover, they show that even though *kolega* shares some ground with *colleague*, some of the nuanced differences in meaning between the two words pose difficulty even for the most advanced learners. What was so difficult to grasp was probably the fact that in English *colleague* refers to fellow workers or co-workers only, and that the word cannot be extended to fellow students.

Scenarios 11 and 16 focused on a *very close and personal* relationship involving trust and willingness to share secrets. Their NSM target was *przyjaciel.* The English monolinguals and the immigrants classified the scenarios as referring to a *friend*. In S16, the immigrants invoked a *close friend* (N = 10). Statistically, however, the immigrants' word distribution patterns in both scenarios were different from those of the English monolinguals. This may be linked to the monolinguals' greater precision of naming that was achieved through the use of *confidant*/*confidante* (N = 8 for both S11 and S16). The bilinguals opted for *soulmate* (N = 7, S11) and *friend*. Even though *soulmate* refers to a very close and special relationship, sharing secrets does not seem to be the main aspect of the word's meaning. A *confidant*/*confidante*, the monolingual choice, is someone we share secrets with.

Throughout the test, particular bilinguals used both *colleague* (N = 12) and *acquaintance* (N = 5) to name stories that did not elicit those words from the English controls, hence pointing in the direction of L1 influence. Nevertheless, the degree of similarity between the answers given by the immigrant and control groups is relatively high and constitutes 72.7%. Moreover, none of the statistically significant contrasts obtained in Test 1 was found to tally with the results of the Fisher exact

test for the parallel scenarios in Test 2 ($p > 0.1$). This implies that the contrasts in lexical categorization do not stem from differences in the respondents' appraisal of the nature of the stimulus situations when judged by broader criteria.

So far, the focus of the analysis has been on group behaviour, which disguised the idiosyncrasies shown by particular individuals and their naming preferences. These have been assessed through a measure derived from the total of all native-like naming options chosen by a particular bilingual, excluding the outliers, i.e. items that appeared once or twice in the monolingual dataset. The measure has been called *agreement with monolinguals by person* and shows that none of the subjects demonstrated completely monolingual-like behaviour. Two subjects were on target in 21 out of 22 scenarios, while one person had a score of 20. The lowest score was 12 (mean = 16.73, SD = 2.4).

A similar measure, i.e. *agreement with monolinguals by scenario*, was devised to find out which of the 22 scenarios elicited the highest number of non-native-like responses from the immigrants. The data collected in this way affords an opportunity to identify scenarios causing the greatest difficulty in terms of naming. The range of the elicited *errors* is broad (range 0–16, SD = 4.08, total = 156), with 6 situations obtaining values of 10 and above (S1, S4, S6, S11, S12, S14; mean = 7.13). Five of them demonstrated distribution patterns that were statistically different from their monolingual counterparts, and were discussed at length earlier on in this section (S1, S6, S11, S12, S14, S16). What is striking about the scenarios is that none of them showed differences from the English controls in the choice of the dominant name, i.e. *friend*, except for S4, which the immigrants labelled as *acquaintance*. The non-native category choices observed in the dataset were linked to the preference for *colleague*, which peaked in S6 (N = 16), giving rise to the highest incidence of non-native naming in the sample. The monolingual Poles subsumed S6, along with S12 and S14, under *kolega*. Another culprit was the use of *mate* to denote shared participation in recreational activities (S1, S10, S14). Finally, in situations describing close friendship (S11 and S16), the immigrants preferred *soulmate* over *confidant*, the monolingual choice. Complete congruence with English patterns was reported in S9 for *friend*, while S16 and S18 focusing on *close friend,* diverged from those patterns in two cases only. Since categories that occurred only once or twice have been excluded from analysis on the grounds of being marginal, all three scenarios may be assumed to exemplify native-like application of L2 partial equivalents. Overall, the most challenging category to acquire turned out to be that of *friend*. The narrower and more specialized categories caused less trouble for the immigrants.

To conclude, the relatively high level of similarity to L1 English monolinguals indicates that the immigrants as a population are successful L2 English learners. The reported differences from the English controls manifest themselves as the expansion and narrowing of category ranges and are most evident in the quantitative analysis of group preferences. They do not affect general categorization patterns since these are the same for the English monolinguals. What could count as a qualitative difference

is the emergence of a new category, i.e. *mate*, to label relationships linked to shared pastimes and leisure activities. *Mate* did not arise to a dominant category name, however. On an individual level, none of the immigrants demonstrated completely native-like naming preferences.

L2 English students tested in English

The L2 English student group was tested in a formal academic setting. For a large majority of the students, it was the main context of L2 English use. The group completed the questionnaire using 39 words in total. Twenty two of the words were classified as marginal. As a result, the data were characterized by considerable variability.

Table 6. The results of Tasks 1 and 2 for the university student sample

Dominant word No. of scenarios	Scenario number	Monolingual English composition	Type of relationship
Close friend (N = 0)	3, 9 (nearing 40% of score for *friend*)	close friend (N = 1) friend (N = 1)	very close and personal (N = 2)
Friend (N = 11)	2, 3, 7, 9, 10, 11, 12, 14, 16, 18, 22	close friend (N = 4) friend (N = 7)	close and personal (N = 6), close but not intense (N = 5)
Colleague (N = 5)	6, 13*, 17, 19, 20	colleague (N = 3) acquaintance (N = 1) friend (N = 1)	purely professional (N = 4), close but not intense (N = 1)
Acquaintance (N = 6)	1, 4, 8, 13*, 15, 21	acquaintance (N = 4) friend (N = 2)	purely social (N = 4), purely professional (N = 1) close but not intense/ purely social (N = 1)
Neighbour (N = 1)	5	neighbour (N = 1)	purely social (N = 1)

* Answers equally distributed between two categories.

As in the case of the immigrant sample, the L2 English students used *close friend* (N = 23) and *best friend* (N = 18) sparingly. Overall, the group made 46 lexical references to close friendship. None of the relevant scenarios received a dominant name having to do with close friendship. On the other hand, six situations were perceived as denoting *very close and personal* relations (N = 6). This implies an obvious unwillingness to lexicalize the idea, perhaps due to the awareness that *przyjaciel* does not have a direct equivalent in English. At the same time, it is likely that the subjects did not completely acquire the monolingual gamut of adjectives that could be used to qualify the relation, as evidenced by the scarcity of the elicited expressions. In addition to *close*/*best friend*, the students used *dear friend* (N = 1),

good friend (N = 3) and **trustful friend* (N = 1). Thirteen students did not mention the category at all.

On the whole, *friend* (N = 11) as a dominant category name was less frequent than in the other groups. This indicates that it has a narrower range in the students' lexicon. Accordingly, its composition does not include features of *acquaintance* and *znajomy*, which were inherent in the English monolingual and immigrant categories. *Colleague* and *acquaintance*, by contrast, seemed to have undergone semantic expansion in terms of the number of scenarios they labelled and in their composition. *Colleague* acquired some of the features of *kolega*, thus losing its elitist and strictly professional character, as some of the elicited collocates suggest, e.g. *university colleague* (N = 1), *job colleague* (N = 1) and *colleague from school* (N = 2). In Test 2, however, it was perceived as referring mainly to professional contexts (N = 3), despite bearing marks of a closer relationship (N = 1). *Acquaintance* (N = 6) in turn reached the size of *znajomy* and embraced the features of both words, a clear sign of L1 Polish influence.

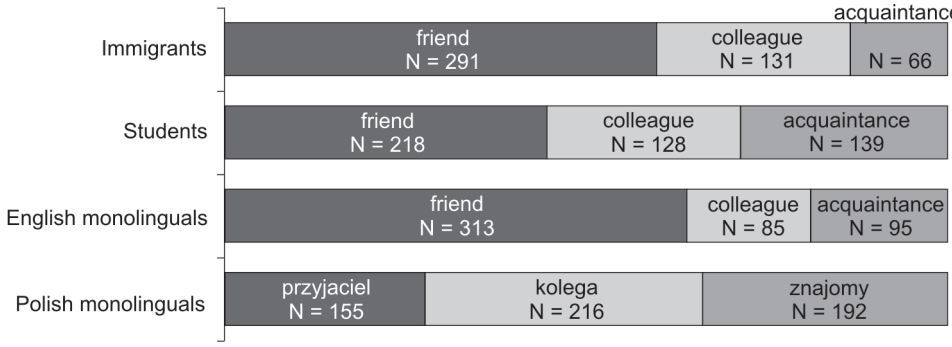

Figure 6. The use of English friendship terms in the study

The analysis of the total count of the names assigned to all of the scenarios in the study has revealed significant differences both from the English monolinguals and the immigrants (see Figure 6). The category of *acquaintance* (N = 139) seems to have expanded dramatically in comparison to that of L1 English monolinguals, while *friend* (N = 218) has been reduced by about 30%. Interestingly, the tendency to overuse *colleague* (N = 128) appears to be the same in the student (N = 128) and immigrant (N = 131) samples, which stresses the word's general propensity for cross-linguistic borrowing. These trends are statistically significant ($\chi^2 = 55.16$, df = 4, $p < 0.0001$, V = 0.13).

The influence of L1 Polish is visible in a few odd calques, borrowings, and coinages, such as **compan* (N = 1) created by analogy to L1 *kompan* 'buddy', or **virtual friend* 'wirtualny przyjaciel' (N = 1) for an *online friend*. **Confessioner* (N = 2) and **chat mates* (N = 1) do not appear in the English lexicon, while *councilor* (N = 2) does not have the meaning of *advisor* or *trusted friend*. *Holiday mates*

(N = 1) appears in the Corpus of Contemporary American English only once. *Cooperator* (N = 1), *campmates* (N = 1), *assistant* (N = 1), *commuter* (N = 1), *listener* (N = 1), *kind person* (N = 1), *penfriend* (N = 1), and *model* (N = 1) have not been used at all by the monolingual English controls. Taken together, these naming attempts are indicative of uncertainty and concurrent lack of familiarity with the most common labels for patterns of friendship in English. More insight into cross-linguistic contrasts in this area was offered by statistical analysis of native speaker word choices and those of the Polish students. In total, 10 stories (S1, S2, S4, S6, S11, S14, S15, S16, S18, S20)[5] showed a significant difference from the monolingual benchmark. Of these 10, S1, S6, S11, S14 and S16[6] produced a significant difference in both the student and immigrant datasets. This might suggest that the scenarios represent areas that generally cause difficulty for Polish learners of L2 English. On closer inspection, however, the name distribution patterns for the scenarios in both groups diverge, with the immigrant group matching the English monolinguals in dominant category names and demonstrating differences predominantly in the choice of the non-dominant labels. The students' results, on the other hand, fit into three categories: different dominant names on account of transfer from the L1, names distributed across several words with no dominant category, and convergent dominant names with differences in the non-dominant ones. These patterns of difference also apply to the 5 scenarios that are unique to the student sample (S2, S4, S15, S18, and S20).

Among the situations manifesting cross-linguistic transfer of dominant names were S1 and S15. Both elicited *acquaintance* (N = 17 and N = 22, respectively) in contrast to the English monolingual preferences, i.e. *friend* (N = 13 and N = 16), but in line with the students' L1 lexical decisions (*znajomy*, N = 29 and N = 26, respectively). Likewise, S6 received the dominant name of *colleague* (N = 12) from the students, while the English respondents opted for *friend* (N = 19). In Polish, the students labeled the scenario *kolega* (N = 17) and *znajomy* (N = 9). It is likely that the adoption of *colleague* was motivated by the scenario's academic setting which encouraged the extension of the word's meaning to relationships forged at university.

No dominant name was given to S14 referring to shared adventures on ski slopes. Although the answers of the English participants were quite homogeneous (*friend*, N = 23), the students came up with a number of labels, including *friend* (N = 7), *companions* (N = 6), *colleague* (N = 5), *mate* (N = 5), *acquaintance* (N = 3), *buddy* (N = 1), *partner* (N = 1), *campmate* (N = 1), and *holiday mate* (N = 1). *Colleague* points in the direction of transfer from L1 Polish, while the others imply a degree of uncertainty about the conventional naming patterns and a subsequent expansion and blurring of category boundaries. It should be

[5] $p < 0.04$, Fisher's exact test, $V > 0.4$.

[6] $p < 0.05$, Fisher's exact test, $V \geq 0.5$.

stressed that only three items, i.e. *partner*, *campmate* and *holiday mate* did not appear in the English monolingual dataset, and that the majority of students saw the scenario as portraying *close but not intense* relations (N = 17). For comparison, the students' answers in Polish were spread out across four categories (*przyjaciel*, N = 4; *kolega*, N = 12; *znajomy*, N = 12; *kumpel*, N = 2) and did not produce a dominant name, either. This suggests that semantic indeterminacy in the L1 may transfer into the L2, resulting in lexicalization problems despite the fact that the L2 offers a salient naming option.

A similar tendency was observed in scenarios targeting *przyjaciel*, i.e. S11, S16, and S18. In this case, all three situations received a dominant name that was in line with the preferences of the monolingual respondents, i.e. *friend* (N = 22, N = 18, and N = 20, respectively). The observed contrast had its source in the non-dominant labels, which numbered from 6 to 8 items and expanded the category in a non-native-like fashion. They included *mate*, *buddy*, *soul mate*, *idol*, *councilor*, *advisor*, *authority*, *model*, *confessioner*, *confessor*, *listener*, *chat mate*, *pal*, *assistant*, and *co-worker*. The English monolingual choices ranged between 2 and 4 items and comprised chiefly *friend* and *confidant(e)*. Such a variety of labeling raises questions about its causes. After analysing the responses to the Polish versions of the scenarios, two possible explanations emerged: semantic indeterminacy that was transferred into the L2 (S11 and S18), and incomplete acquisition of the category *(close) friend*, which compelled some of the L2 learners to look for what seemed to be an adequate equivalent of *przyjaciel* in S16.

To sum up, the degree of agreement for the monolingual L1 English sample and Polish students of L2 English is 54.5%. Only three of the statistically significant contrasts reported for the sample showed statistical differences from the monolinguals in Test 2 (S1, S4, and S20; $p \leq 0.04$, Fisher's exact test). Since this is not a widespread tendency, there are no grounds for claims of a causal relationship between lexical labelling and categorization against a set of broader and more inclusive criteria, such as *social* and/or *professional*.

As regards the degree to which individual students manifested native-like categorization behaviour, there was only one student whose naming choices were in complete agreement with those of the English monolinguals. Two students obtained a score of 21. The lowest level of agreement was 8 scenarios, while the group average was 15 (mean = 15.2, SD = 3.21). Agreement by scenario presents a grimmer picture, with non-native name choices observed in a total of 201 cases in all of the scenarios (mean = 9.18, SD = 5.72), and ranging between 2 and 23 instances per scenario. Nine scenarios elicited 10 and more non-native names (S2, S6, S10, S12, S14, S16, S18, S19, S22). Five produced naming patterns that differed in a statistically significant way from those of the monolinguals (S2, S6, S14, S16, S18, S20). There were also three instances of a crossover to a category inspired by the L1 equivalent (S1 and S15 *acquaintance* and S6 *colleague*). In the remaining cases, differences arose from the interfering influence of *colleague*, *mate* (S12 and S14) and the presence of outliers.

All of them can be held responsible for the highest incidence of contrasts in S14. The fewest discrepancies from the monolingual norm were noted in S17 for *colleague* and S21 for *acquaintance*. A category causing the most difficulty was *friend*. Regardless of its comprehensiveness, it invited the highest incidence of transfer from *kolega*, and to some degree *acquaintance*. The narrower and more specific categories caused relatively few problems.

The practical implications of these findings are that the L2 students are less successful than the immigrants despite obtaining comparable results on a proficiency test. In principle, they diverge from the English monolinguals in terms of L2 categorization patterns and demonstrate greater incidence of L1 influence, as well as a considerable variability and instability of naming.

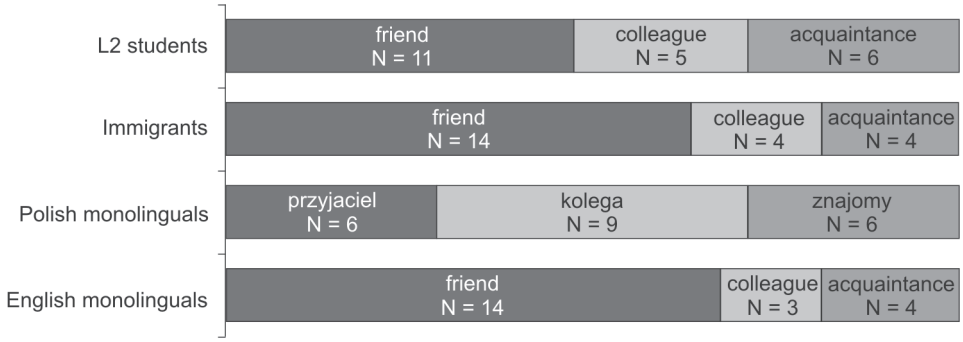

Figure 7. The semantic ranges of *friend*, *colleague*, and *acquaintance* as dominant word categories in the researched populations

Comparison of the students' and immigrants' naming preferences

The analysis of the results obtained by university students who use L2 English predominantly in a formal setting, and immigrants exposed to L2 English in a natural context shows quantitative differences in the use of friendship terms ($\chi^2 = 36.49$, df = 2, p = 0.0001, V = 0.19) but not in categorization patterns (p = 0.65, Fisher's exact test) (see Figure 7).

Considering the frequency with which particular words were used in the study, we can observe a gradual expansion of *friend*, with the students' results (N = 218) diverging considerably from the values obtained by the immigrants (N = 291) and English monolinguals (N = 313). *Acquaintance* was used more broadly by the students (N = 139, monolinguals N = 95) but was drastically reduced in the immigrant group (N = 66). *Colleague* remained equally popular with both samples, presumably because its phonetic similarity to *kolega* made it a natural choice for borrowing. Statistically, both groups produced significant differences from each other and from the English monolinguals ($p < 0.05$). Although the nominal data produced by the questionnaire cannot be reliably correlated to assess their similarity, they do, nevertheless, give an intuitive sense of the developmental nature of the

interaction between Polish and English semantics, and of the bilinguals' gradual approximation to L2 monolingual norms.

Another factor leading to differences between the bilingual samples is variability in naming. The students used 39 words in total, including words used once or twice (N = 22). These outliers reflect the students' inability to come up with the right term since some of them produced non-existent coinages (N = 3) and words that were not friendship terms and were clearly applied in the wrong context (N = 9). The immigrants' choice of words was more accurate and definitely less diverse, with 26 words in total, including 10 outliers. The latter comprised only two unrelated words, while the coinages (**party mates* and *study mates*) could be taken for legitimate English expressions by non-native speakers of the language. The Fisher exact test revealed differences between the student and immigrant word distribution patterns in 8 scenarios (S1, S8, S10, S11, S14, S15, S16, S21),[7] with the degree of congruence between the two groups reaching 64%. Since 6 of the scenarios coincide with those described in the sections on the differences from the English monolinguals, this discussion will focus on S8 and S21 because they are unique to the current analysis. Both scenarios targeted *znajomy* and received the dominant name of *acquaintance* (S21: N = 16 and N = 24; S8: N = 11 and N = 21), except that in S8, the scores were equally spread between *acquaintance* and *neighbour* (N = 11) in the immigrant sample. Overall, the students used *acquaintance* noticeably more often, a clear sign of L1 Polish influence.

In conclusion, the immigrants appear to be more successful than the students as their choice of lexical categories more closely resembles that of monolingual English speakers, with the level of similarity reaching 73%. The students with an agreement level of 55% appear to be some way behind. This is confirmed by the comparison of the categorization patterns of the immigrant and student groups (see Figure 7). They give a very real sense of the extent of contrasts between the groups concerned and form a basis for comparisons of the effectiveness of learning contexts.

Polish immigrants tested in L1 Polish

When tested in L1 Polish, the immigrants diverged from the monolingual controls mainly in terms of the exhibited categorization patterns. First of all, the range of *przyjaciel* (N = 8) was broadened to include 2 scenarios rated as representing *close but not intense* relations. Consequently, the word took on some of the characteristics of *friend*. The category of *znajomy* (N = 8), which accommodated mainly *social relations* (N = 5), followed suit and became extended, too. *Kolega* (N = 5), by contrast, was restricted to situations perceived as *purely professional* (N = 2) and *close but not intense* (N = 2), a clear example of L2-induced narrowing of category boundaries (see Table 7). Interestingly, in the immigrants' view, all three words conveyed the same level of closeness since each received two ratings of *close but not intense*. This

[7] $p < 0.05$, Fisher's exact test, $V > 0.4$.

to some extent obscured the differences between them, as exemplified by Scenario 2, whose dominant names were equally divided between *przyjaciel* (N = 10) and *znajomy* (N = 10), despite the fact that they apply to relationships that are emotionally distant. The third option, *kolega* (N = 8), was right behind, adding support to the idea.

Another aspect worthy of note is the emergence of a new dominant category name for Scenario 19, i.e. *współpracownik*. The immigrants did not differ from the Polish monolinguals in how often they used the word (N = 12 and N = 10, respectively) but in the fact that, unlike the monolinguals, they made it a dominant category label for a *purely professional* relationship. This may have stemmed from a need for a specialized term referring specifically to professional contact, along the lines of *colleague*. In general, the immigrants' choice of dominant names was different from that of monolingual Poles in five situations (S2, S10, S12, S17, S19). At least four of the names involved replacing the monolingual *kolega* with a different dominant category, which was symptomatic of a tendency to avoid the word and found reflection in the word frequency count for the sample. These categorization effects do not have statistical significance (p = 0.78, Fisher's exact test). They are, nevertheless, quite informative about potential areas of cross-linguistic influence in the L1 lexicon and are therefore of value to this analysis.

Table 7. The results of Tasks 1 and 2 for the Polish-English bilingual sample (immigrants) tested in L1 Polish

Dominant word No. of scenarios	Scenario number	Monolingual Polish composition	Semantic categorization
Przyjaciel (N = 8)	2*, 3, 7, 9, 10, 11, 16, 18	przyjaciel (N = 6) kolega (N = 2)	very close and personal (N = 5) close but not intense (N = 2) very close and personal/close but not intense (N = 1)
Kolega (N = 5)	6, 14, 17, 20, 22	kolega (N = 4) znajomy (N = 1)	purely professional (N = 2) purely social (N = 1), close but not intense (N = 2)
Znajomy (N = 8)	1, 2*, 4, 8, 12, 13, 15, 21	znajomy (N = 5) kolega (N = 3)	purely social (N = 5) purely professional (N = 1) close but not intense (N = 2)
Sąsiad (N = 1)	5	sąsiad (N = 1)	purely social (N = 1)
Współpracownik (N = 1)	19	współpracownik/kolega (N = 1)	purely professional (N = 1)

* Answers equally distributed between two categories.

Also of interest is the application of non-existent Polish words, i.e. **powierzyciel* 'powiernik' (N = 2) for a confidant and **współrozmówca* '*fellow talker/*rozmówca*' (N = 3) for an interlocutor, as well as a change of meaning of formally similar items. For instance, *poradnik* 'guide book' (N = 1) was used to denote *doradca* 'advisor', and *drużyna* 'team' (N = 1) replaced *zespół*. As can be inferred from their frequency of use, these coinages were isolated occurrences produced by a few individuals. Their worth lies in the explanatory potential of the initial stages of L2-induced L1 change and possibly L1 attrition.

In contrast to their performance on the English test, in Polish, the immigrants provided quite a few qualifying adjectives for all three terms. Those describing *przyjaciel* positively appraised the relationship, emphasizing its intimate character. The following were the most frequent descriptors: *dobry* 'good' (N = 5), *bliski* 'close' (N = 4), *najlepszy* 'best' (N = 2), *bardzo bliski* 'very close' (N = 2), and *od serca* '*from the heart' (N = 2). *Sportowi przyjaciele* was definitely modelled on *sporting friends,* which, although being odd by English standards, remains grammatically possible. The descriptors of *kolega* focused on shared experience within an institutional framework. The most common ones were connected with a place of work and/or study, and included: *kolega z pracy* 'from work' (N = 25), *z klasy* '*from class' (N = 5), *ze szkoły* 'from school' (N = 5), *po fachu* 'in the same line of work' (N = 4), *ze studiów* '*from studies' (N = 3) *z konferencji* '*from a conference' (N 1), *z wykładów* '*from lectures' (N = 1), as well as *dobry kolega* 'good' (N = 7) and *bliska koleżanka* 'close female kolega' (N = 5). *Znajomy* occurred together with 25 descriptors, the most frequent of which specified the context the relationship was formed in, as in: *znajomy z pracy* 'from work' (N = 15), *ze studiów* '*from studies' (N = 3), *z konferencji, ze szkoły* 'from a conference, school' (N = 2 each), *z osiedla, z roku* '*from the neighbourhood, from the year at college' (N = 1 each). *Dobry* and *bliski* 'good and close' (N = 13 and N = 7, respectively) defined the nature of the relationship.

The frequency count conducted for L1 Polish listed 22 distinct words, including 10 outliers. The immigrants did not statistically differ from the monolinguals ($x^2 = 2.83$, $df = 4$, $p = 0.58$), although *kolega* (N = 176) was used noticeably less often, while *znajomy* (N = 199) acquired the status of the most frequent word. *Przyjaciel* (N = 144) was used less often, too. The remaining two targets, *sąsiad* (N = 32) and *współpracownik* (N = 28) were in fourth and fifth place, albeit with a much lower score. It follows that, on the whole, the immigrants retained their L1-specific semantic distinctions and that the observed differences were too subtle to make a significant difference. That differences were beginning to emerge can be seen from the analysis of the name distribution patterns found to be statistically different from those of the monolinguals.

In general, the level of agreement with the Polish monolingual sample was high, i.e. 77%. In total, there were 5 situations showing statistical differences (S7, S10, S13,

S21 and S22).[8] In S22, the differences could be attributed to the effect of outliers. Scenarios 10 and 21 revealed a difference in categorization patterns. It was most likely rooted in the respondents' evaluation of the nature of the relationship, as measured in Test 2. Accordingly, in S10 targeting *friend*, the monolingual *kolega* (N = 19) was matched against the bilingual *przyjaciel* (N = 14), with *kolega* coming second and obtaining a score of 9. In Test 2, the monolinguals and bilinguals alike were divided as to whether the situation depicted a relation that was *close but not intense* (N = 13) or *very close and personal* (N = 13). The naming patterns reflect this divide. It should be pointed out that the respondents were not always consistent in how they named particular scenarios in the two tests and often used mutually exclusive labels, i.e. *przyjaciel* for a *close but not intense* relation. In S21, the monolingual Poles who saw the situation as *purely social* preferred *kolega* (N = 19), while the majority of the bilinguals used *znajomy* (N = 24). Situation 13 describing a person met during a conference dinner elicited *znajomy* as the category name N = 16). In addition to *znajomy*, the immigrants also used *kolega* (N = 8). Since both samples saw the situation as *purely professional* (mean = 22.0), the latter can be seen as an instance of cross-linguistic influence whereby the semantics of *colleague* affect the use of *kolega*. S7 received the dominant name of *przyjaciel* (N = 12), as it referred to a *very close and personal* relation in the opinion of both groups (N = 27 and N = 19). Here, the immigrants also used *znajomy* (N = 6), and hence demonstrated a loss of semantic distinctions in the L1. Only two of the five cases described above were linked to statistically significant differences in Test 2 (S7 and S13, $p \leq 0.03$, Fisher's exact test).

A more precise measure of the extent to which the immigrants diverged from the Polish monolinguals is the number of situations where each bilingual applied the same name as the monolinguals. Here, too, the level of agreement was high, with 20 individuals obtaining a score of 20 and above (mean = 19.6, SD = 2.14). Disagreement by scenario was optimistically low (mean = 3.27, SD = 3.36, total = 72), with the immigrants obtaining monolingual values (range = 0–14) in 11 scenarios (S1, S3, S4, S5, S8, S12, S15, S17, S18, S20, S21). The highest number of non-native-like responses was 14 for S7 referring, in the monolinguals' opinion, to *przyjaciel.* The immigrants' were less definitive in their judgments and used a few outliers, creating the high score. The second and third highest results were 7 (S6 and S10) and 6 (S9 and S13). In all of them, the non-native behaviour could be attributed either to the presence of outliers or to lower values for *kolega.*

In conclusion, considering the relatively high level of agreement with the monolingual Poles, as well as the lack of statistical differences in the overall use of friendship terminology, the immigrants' L1 has demonstrated stability and resistance to L2 influence.

[8] $p \leq 0.04$, Fisher's exact test, $V \leq 0.5$.

L2 English students tested in L1 Polish

The analysis of the students' responses to the Polish version of the questionnaire did not reveal differences in categorization patterns between the three participant groups ($p > 0.4$, Fisher's exact test, see Figure 8). Altogether, the students used 25 lexical categories, including 13 outliers.

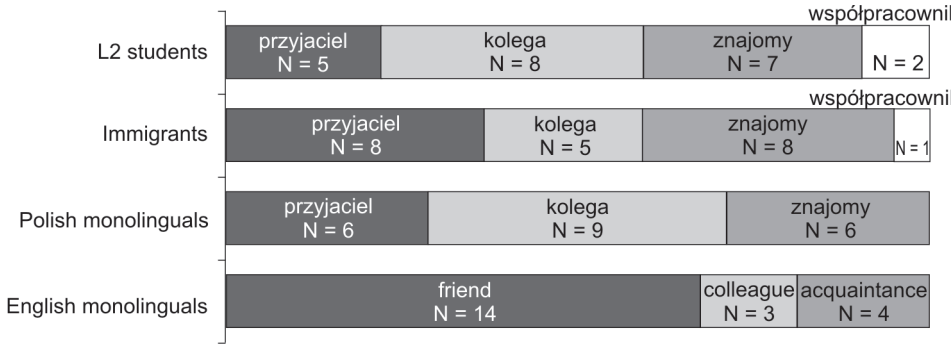

Figure 8. Categorization ranges of *przyjaciel, kolega, znajomy*, and *współpracownik*

The category *przyjaciel* was the narrowest, with 5 scenarios evaluated as *very close and personal* (N = 5), while *kolega* was the broadest with 8 dominant words (N = 8). *Znajomy* fell in between with 7 dominant names (N = 7). An interesting development was an increase in the use of *współpracownik* as a dominant category name for two scenarios (S17 and S19). Both of them were perceived as *purely professional* (N = 24 and N = 22, respectively), which suggests that in the students' opinion, *kolega* did not adequately fit contexts targeting *colleague.* Such an interpretation was borne out by Test 2, where *kolega* was perceived as denoting mainly *close but not intense* and *purely social* relations. Another possibility is that the respondents avoided what might have seemed to be a *calque* from L2 English, and consequently used a word that was unrelated to *colleague* both structurally and phonetically. Since similar avoidance of calquing was observed in the immigrants' choice of name for Scenario 19, the conclusion is that it might be a factor influencing naming patterns in the bilingual's L1. Although this project does not provide information about the subjects' motivation behind vocabulary choice, data on the subject were obtained by the author in an earlier study of borrowing in the context of an English Philology department. One of its findings was that the students were very aware of borrowing into the L1 and, despite exploiting it for a variety of reasons, considered the process to be a pollutant of their native language (Latkowska 2002; cf. Arabski 2007; Otwinowska-Kasztelanic 2000). They also identified strongly with the Polish culture. Apart from the use of *współpracownik* in S17 and S19, one other scenario instantiates a crossover to a new category name, i.e. S21, which elicited *znajomy*. Although the composition of its naming pattern is only marginally different from that of the monolingual Poles, it confirms the tendency to avoid *kolega* in favour of the other two names.

Table 8. The results of Tasks 1 and 2 for the Polish student sample tested in L1 Polish

Dominant word No. of scenarios	Scenario number	Monolingual Polish composition	Semantic categorization
Przyjaciel (N = 5)	3, 7, 11, 16, 18	przyjaciel (N = 5)	very close and personal (N = 4) close but not intense (N = 1)
Kolega (N = 8)	2, 6, 9, 10, 12, 14*, 20, 22	kolega (N = 7) przyjaciel (N = 1)	purely professional (N = 1) purely social (N = 2) close but not intense (N = 4)
Znajomy (N = 7)	1, 4, 8, 13, 14*, 15, 21	znajomy (N = 5) kolega (N = 2)	purely social (N = 5) purely professional (N = 1) close but not intense (N = 2) very close and personal (N = 1)
Sąsiad (N = 1)	5	sąsiad (N = 1)	close but not intense (N = 1)
Współpracownik (N = 2)	17, 19	współpracownik/ kolega (N = 1) znajomy (N = 1)	purely professional (N = 2)

* Answers equally distributed between two categories.

The students did not use as many adjectives as the immigrants to qualify category names. The most frequent one for *przyjaciel* was *bliski* 'close' (N = 6). *Kolega* was largely *z pracy* 'from work' (N = 18) and *dobry* 'good' (N = 7) and so was *znajomy* (N = 11 and N = 9, respectively). There was only one coinage that could be classified as an L2 English-motivated blend, e.g. **współstudenci* 'fellow students' (N = 1).

Concerning the frequency of use of particular names in the dataset, *znajomy* (N = 225) was the most frequent item, to be followed by *kolega* (N = 172) and *przyjaciel* (N = 120). Of the other categories referred to in the study, *sąsiad* (N = 26), *współpracownik* (N = 35) and *kumpel* (N = 25) attained some prominence. The expansion of *znajomy* was most likely accomplished at the expense of *przyjaciel*, whose frequency was reduced. The data obtained in Test 2 suggest an intense weakening of semantic distinctions, particularly in the case of *znajomy,* which the students saw as a cover-all word for all four types of relationships (see Table 8). The Polish monolinguals associated the word with *purely social* and *professional* connections. The frequency data were statistically different from those obtained by the monolingual Poles ($x^2 = 10.11$, $df = 4$, $p = 0.03$), and demonstrated that L2 learning in a formal setting had the potential to instigate restructuring effects within the L1.

The general level of agreement with monolingual Poles is 82%. This is because statistical analysis found four name distribution patterns to diverge from those of the monolingual controls (S6, S10, S11 and S14).[9] The most conspicuous feature of the contrasting distribution patterns is the fact that they did not differ from the monolingual choices in terms of dominant category names, which were the same, but in the presence of an alternative name that was frequent enough to affect measures of statistical significance. This was true of S6, S10, and S14, all of which received the dominant label of *kolega* (monolinguals: N = 23, N = 19, and N = 19, respectively; bilinguals: N = 17, N = 11 and N = 12, respectively). The competing label was *znajomy.* These findings are indicative of a weakening of semantic distinctions between related words in the L1 and may have been encouraged by the competition between *kolega* and *colleague.* By the same token, Scenario 11 elicited mainly *przyjaciel* (N = 21 and N = 12) from both samples. The offset effect in the immigrant group was created by *powiernik* 'confidant' (N = 13). The results of the Fisher exact test ruled out the possibility that the emergence of competing names was triggered by differences in how the respondents perceived the scenarios concerned, as evidenced by Test 2. Of the 4 scenarios, statistically significant contrasts were only found for S6 (p = 0.049).

As regards naming agreement with monolingual Poles, the students' monolingual-like name choices ranged between 14 and 22. On average, the agreement rate was very high (M = 19.2, SD = 2.13), with 6 students exhibiting monolingual naming preferences. Agreement by scenario demonstrated monolingual behaviour in 9 situations. The highest rate of non-native responses occurred in S6 and S10 (N = 13 and N = 12, respectively) and could be attributed to the lower number of *kolega*, as compared to the monolingual naming frequencies. In S9, by contrast, the differences (N = 8) were caused by a change of dominant name from the monolingual *przyjaciel* to *kolega*.

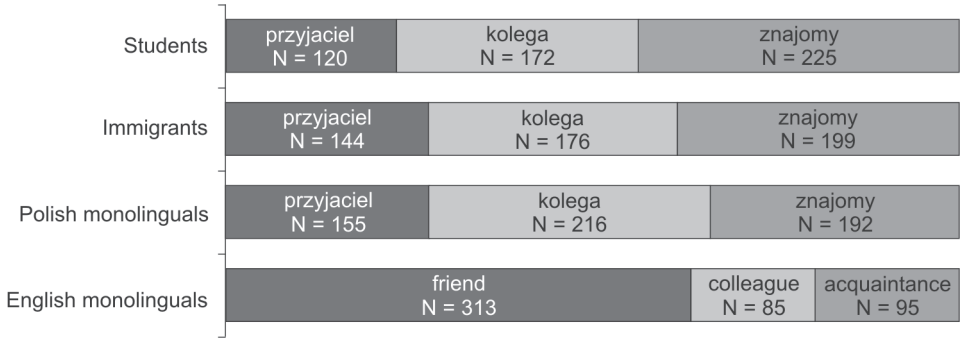

Figure 9. Frequency of use of *przyjaciel*, *kolega* and *znajomy* by L2 English students

[9] $p \leq 0.04$, Fisher's exact test, $V > 0.2$

Regarding the comparison of the students' and immigrants' name distribution patterns, there were two cases of statistical contrast, namely, S4 and S22. In both of them, the contrasts had their source in the presence of outliers. The overall level of agreement was very high and constituted 91%.

To conclude, despite the fact that the students had limited exposure to L2 English and communicated through its medium predominantly in a formal academic context, their L1 naming preferences in the domain of friendship show differences from those of Polish monolinguals. The affected areas are the frequency of use of specific friendship terms and semantic specificity. The latter constitutes evidence of a weakening of categorical distinctions between specific words.

4.2.6.1. Intra-group variables

Counter to the inter-group comparisons that have so far been the focal point of the discussion, this section looks into whether and to what extent categorization patterns in the bilingual's languages are affected by factors found to determine the development of consecutive bilingualism, i.e. use of L1 Polish, use of L2 English, length of stay in an L2 environment, and proficiency in L2 English (Athanasopoulos 2011a; Jarvis and Pavlenko 2008). These factors stem from the participants' linguistic and social circumstances and constitute intra-group variables. An additional variable that focused on individual behaviour rather than group characteristics and was therefore included in the analysis was *agreement with monolinguals by person*.

The immigrants

A Pearson product-moment correlation test was run on two of the inter-group variables, i.e. agreement with English monolinguals and the English proficiency score, and produced a moderate positive correlation ($r = 0.461$, $p = 0.01$). For the variables that did not follow normal distribution, a non-parametric Spearman rank-order correlations test was computed. It found that the length of stay in an English-speaking environment was moderately correlated with agreement with Polish monolinguals, and that the correlation was negative ($\rho = -3.8$, $p = 0.03$).

To further untangle the nature of the interaction between proficiency in L2 English and agreement with English monolinguals, a simple regression analysis was performed, with the English proficiency score as the independent variable and agreement with English monolinguals as the dependent one (Model 1). The model was statistically significant ($F(1,28) = 7.537$, $p = 0.01$, $R = 0.46$, $R^2 = 0.21$). Proficiency in L2 English turned out to be a predictor of naming agreement with English monolinguals, albeit not a strong one (21%). When length of stay in an L2 country was entered into the model as a second independent variable (Model 2), the model was non-significant ($\beta = -0.06$, $t = -0.39$, $p = 0.7$). The procedure was not performed for the length of stay in an L2 environment and agreement with monolingual Poles

because the data did not meet two assumptions of linear regression: the normality of distribution assumption and the requirement of a linear relationship between the two variables.

These results confirm that proficiency in the L2 is a predictor of naming behaviour in the L2 and that factors such as length of stay in an L2 country and the amount of L2 use play a less prominent role than one is intuitively led to believe (cf. Athanasopoulos 2011a; Pavlenko 2011a). Even though the length of stay in an L2 country is often linked to L2 proficiency, these variables were weakly correlated ($r = 0.15$, $\rho = 0.06$, $p > 0.05$) and non-significant. The correlation between the use of the L2 and proficiency in the language lacked statistical significance, too ($\rho = 0.28$, $p = 0.13$). As far as the immigrants' L1 is concerned, the study shows that, despite the semblance of stability and resilience to cross-linguistic influence, it is likely to show restructuring effects as the bilinguals extend their stay in the L2 setting.

The students

A strong positive correlation ($r = 0.54$, $p = 0.001$) was found between agreement with English monolinguals and agreement with their Polish counterparts. A non-parametric Spearman rank-order correlations test confirmed the result ($\rho = 0.51$, $p = 0.001$). The Spearman coefficient was also computed for the remaining variables that did not follow normal distribution. It revealed a moderate negative correlation between the length of L2 study and agreement with monolingual Poles. The correlation bordered on significance ($\rho = -0.35$, $p = 0.052$), and implied that the length of L2 study understood as the amount of time devoted to the improvement of L2 skills was potentially linked to a decrease in the accuracy of naming in the L1.

What certainly deserves mention is the strong positive correlation ($\rho = 0.51$, $p = 0.001$) between naming in L1 Polish and naming in L2 English. Since a correlation between variables does not indicate a causal relationship, any claims about cross-linguistic effects in this domain would appear unfounded. It is fair to say, however, that in a formal learning setting the accuracy of lexical categorization in the L1 goes hand in hand with the accuracy of categorization in the L2. Given the observed differences from both Polish and English monolinguals, it appears that the high level of correlation may be a sign that the students are acquiring the L2, and also altering their L1 in the process. As a result, their languages show evidence of restructuring and development into autonomous and unique systems which diverge from the monolingual varieties. Such a reading needs more research to obtain a verifiable empirical basis. As things stand, the study sheds light on the acquisition of disparate naming patterns in a culturally undiversified environment and becomes all the more interesting in the light of the fact that the immigrants are closer to the monolingual norm in both their languages.

Table 9. Parametric and non-parametric correlations for the immigrants

Immigrants N = 30	Agreement with English monolinguals	Length of stay (Spearman's rho)	Use of English (Spearman's rho)	Use of Polish (Spearman's rho)	English proficiency (Spearman's rho)	Agreement with Poles (Spearman's rho)
Agreement with English monolinguals (Pearson correlation)	n/a	ρ = −0.145 p = 0.445	ρ = 0.304 p = 0.103	ρ = −0.281 p = 0.132	parametric	ρ = 0.246 p = 0.190
Length of stay (Pearson correlation)	r = 0.007 p = 0.969	n/a	ρ = 0.95 p = 0.616	ρ = −0.161 p = 0.395	ρ = 0.066 p = 0.731	*ρ = −0.383 p = 0.037
Use of English (Pearson correlation)	r = 0.230 p = 0.221	r = 0.145 p = 0.443	n/a	ρ = −0.060 p = 0.752	ρ = 0.280 p = 0.133	ρ = 0.113 p = 0.551
Use of Polish (Pearson correlation)	r = −0.314 p = 0.091	r = -0.229 p = 0.222	r = −0.017 p = 0.930	n/a	ρ = −0.157 p = 0.408	ρ = 0.209 p = 0.267
English proficiency score (Pearson correlation)	*r = 0.461 p = 0.010	r = 0.158 p = 0.403	r = 0.205 p = 0.277	r = −0.154 p = 0.415	n/a	ρ = −0.045 p = 0.812
Agreement with Poles (Pearson correlation)	r = 0.276 p = 0.139	r = −0.320 p = 0.085	r = 0.149 p = 0.430	r = 0.226 p = 0.229	r = −0.064 p = 0.738	n/a

* Correlation is significant at the 0.05 level (2-tailed).

Table 10. Parametric and non-parametric correlations for the students

Immigrants N = 30	Agreement with English monolinguals	Length of stay (Spearman's rho)	Use of English (Spearman's rho)	Use of Polish (Spearman's rho)	English proficiency (Spearman's rho)	Agreement with Poles (Spearman's rho)
Agreement with English monolinguals (Pearson correlation)	n/a	ρ = −0.061 p = 0.747	ρ = −0.123 p = 0.517	ρ = −0.230 p = 0.222	parametric	ρ = 5.16 **p = 0.001
Length of study (Pearson correlation)	r = −0.059 p = 0.756	n/a	ρ = 0.061 p = 0.750	ρ = −0.138 p = 0.468	ρ = −0.083 p = 0.662	ρ = −0.358 p = 0.052
Use of English (Pearson correlation)	r = −0.007 p = 0.970	r = 0.121 p = 0.522	n/a	ρ = −0.029 p = 0.878	ρ = 0.131 p = 0.491	ρ = −0.035 p = 0.853
Use of Polish (Pearson correlation)	r = −0.184 p = 0.331	r = −0.272 p = 0.147	r = 0.026 p = 0.894	n/a	ρ = −0.219 p = 0.245	ρ = −0.090 p = 0.635
English proficiency score (Pearson correlation)	r = 0.280 p = 0.134	r =– 0.103 p = 0.589	r = 0.066 p = 0.729	r = −0.130 p = 0.493	n/a	ρ = 0.230 p = 0.222
Agreement with Poles (Pearson correlation)	r = 0.545 **p = 0.001	r = −0.355 p = 0.054	r = 0.010 p = 0.960	r = 0.098 p = 0.608	r = −0.210 p = 0.266	n/a

* Correlation is significant at the 0.05 level (2-tailed).

4.2.6.2. Category core features

The final component of the analysis is a review of the most prominent attributes of each friendship term, as viewed by the participant populations. The attributes have been singled out from those scenarios that showed the least variability in naming and produced a dominant name with a high frequency score. To objectively identify scenarios with the highest scores, a median split procedure was performed. For the purposes of this study, it is assumed that the attributes constitute the semantic core of each category.

The reason for considering scenarios rather than the NSM explications in the analysis is that they contain additional cultural and contextual information and hence more accurately portray the factors considered during the naming process. To highlight contrasts between the participant groups, each friendship term is presented next to its perceived counterpart because this may help to identify points of similarity and difference between them. It is also relevant to note that some of the conventional attributes of the words proved to be by no means absolute. For instance, the popular understanding of *przyjaciel* embraces provision of help. However, because the vast majority of the Polish monolingual respondents prioritized trust, help was relegated to a more peripheral position. The complete frequency data obtained in the study are included in the Appendix.

Table 11. Core features of the three friendship terms as perceived by the participant groups

Term	Monolinguals	Immigrants	Students
1	2	3	4
Friend	Provision of help when it is needed; participation in the same activities; trust, mutual affection and enjoyment of each other's company. *Friends* have fun together	Enjoyment of the other person's company; provision of help when it is needed; trust, respect and admiration	Enjoyment of each other's company; mutual affection, trust and participation in shared activities; feel-good-in-their-company factor
Przyjaciel	Trust, honesty and admiration for the other person; long-term involvement in the same social and educational activities	Trust and admiration; long-term participation in shared activities; enjoyment of each other's company; provision of help	Trust and admiration; a long-term relationship; affection and enjoyment of each other's company
Colleague	Professional relationship; shared institutional membership and positive feelings associated with it	Shared institutional membership and responsibilities; positive feelings arising from the relationship	Shared institutional membership and positive feelings evoked by it

Table 11 continued

1	2	3	4
Kolega	Shared participation in educational activities at school or university; engagement in recreational pastimes such as skiing or having a chat over a cup of coffee. *Koledzy* have fun together but a sense of distance is there, too	Shared participation in educational activities at school or university, purely professional connection that does not involve personal contact or knowledge of the individuals concerned	Shared participation in educational activities at school or university; shared recreational pastimes such as hiking
Acquaintance	Relationship based on social and/or conversational contact; limited trust and a sense of distance	Relationship based on limited conversational contact and little trust	Provision of help; participation in recreational activities; limited conversational contact
Znajomy	Limited contact restricted to a professional or social context; shared recreational activities that do not require intimate/ close knowledge of individuals	Limited contact of social or conversational nature; personal favours and participation in social activities that do not require intimate/ close knowledge of individuals	Same as the immigrants, absence of a sense of distance

Table 11 testifies to the degree of divergence between Polish and English friendship terms which popular opinion, including that of some of the participants in this study, perceives as translation equivalents. It also shows that both of the bilinguals' languages are affected by the semantics of translation equivalents and thus reflect the workings of bidirectional transfer. The influence of L2 English can be detected mainly in the restructuring of the L1 categories of *przyjaciel* and *kolega* in the immigrants' lexicon. Central to *przyjaciel* is the theme of provision of help. Although popular in Polish culture, it was not brought to the foreground by the residents of Poland participating in the study. On the other hand, the range of *kolega* was extended to include professional dealings that did not involve personal contact. Also of relevance is the students' understanding of *znajomy*. Because the students did not perceive it as implying a sense of distance from people, it functioned as a cover-all term in the study. Even though this does not bear the marks of direct L2 influence, a similar expansion of *znajomy* was found in Study 1b, which was conducted with a different group of students. This suggests that it is not an isolated occurrence and, as such, may be the result of internal restructuring processes induced by extensive contact with another language and cross-linguistic interaction

between related terms, i.e. *kolega* and *colleague.* As for the influence of L1 Polish, it certainly found its way into the students' understanding of an *acquaintance,* which exhibits features typical of a relationship characterized by positive interaction and responsibility.

In conclusion, the analysis shows that the bilinguals' grasp of the semantics of friendship terms is dependent on the intensity of contact with a particular language and is hence influenced by the dominant language of the environment (cf. Daller et al. 2011). Two points need to be taken into account when interpreting these results. First, the semantic templates considered in this section are linked to the most frequent naming patterns constituting the core of each lexical category. Patterns that were less frequent than the median were excluded from the analysis on account of being backgrounded by the respondents. Second, the NSM does not have the precision of componential analysis or other decompositional approaches to meaning. Consequently, the information included in the scenarios could not be reliably quantified and analysed statistically, and should be treated as a complement to more objective quantitative analyses.

4.2.7. Discussion and summary of findings

This section provides an overview of the results of Study 1a. These take the form of answers to the research questions raised at the outset of the investigation (see Section 4.2.1), and hence are arranged into thematic sections according to the issue they address.

4.2.7.1. Bilingual categorization patterns in the L2

Study 1a presents yet another glimpse into the extensively researched dilemma of second language learners who, despite achieving advanced proficiency in their L2, diverge from its monolingual speakers in naming and a number of other areas. The study shows that the nature and extent of the differences can be linked to the setting of L2 use, as naming contrasts are less intense in the target-language environment. This is not to say that they are non-existent since the accuracy rate that the immigrants achieved for naming was 72.7%. Significant differences were also found in the frequency of use of the three friendship words. The phonetically similar *colleague* is overused, while *friend* and *acquaintance* are less frequent than in the English monolingual dataset.

A remarkable achievement on a group level is that the immigrants behaved like monolinguals in the choice of dominant names for each scenario, producing as a consequence categories whose content and sizes were only minimally different from those of the English controls. An exception was the reduced size of *close friend,*

which was marginalized by both bilingual samples. On an individual level, none of the immigrants was 100% accurate in naming, yielding an average accuracy rate of about 17 scenarios (mean = 16.73) per person. Of the stimulus situations, only one elicited 100% monolingual-like responses. The total number of non-native-like names in the dataset of 660 nouns was 156.

The main instigator of such contrasts is semantic transfer from the L1 category of *kolega*. The most challenging word to acquire is *friend*, as it invited the highest incidence of *colleague*. Also, the diversity of outliers and the emergence of the competing category of *mate* account for a sizeable proportion of the contrasts and signify failure to invoke the typical naming label.

The students demonstrate even greater vulnerability to L1 influence, and accordingly, resort to borrowing and calquing on some of the outliers, e.g. **compan* 'kompan' or *virtual friend* 'wirtualny przyjaciel'. The dataset also contains instances of L1 semantic transfer, which is evident in the increased popularity of *acquaintance* and in the fact that all three terms exhibit semantic features of their L1 equivalents. For instance, *colleague* has lost its elitist and purely professional character, while an *acquaintance* does favours for the scenario's narrator. *Friend* is noticeably less frequent and does not take on board the possibility of providing help. L1 influence has additionally been detected in name distribution patterns where it affected both dominant category names and the less central members. It also instigated naming indeterminacy. However, naming indeterminacy may also have its roots in incomplete acquisition. The basis for this interpretation is the observed variability of the labels used, i.e. 39 words in total, including 22 outliers. These comprised non-existent coinages such as **confessioner* or words that did not figure in the monolingual dataset. Incomplete acquisition was also the most likely cause of the marginalization of *close friend*.

Only one student exhibited 100% agreement with English monolinguals in the choice of category labels; the group average was 15 monolingual names per person (mean = 15.2). In general, the students produced 201 names that did not tally with the English monolingual preferences (mean = 9.18). As in the case of the immigrants, the most difficult word to use in a native-like fashion was *friend*, which invited transfer from *kolega*. The sample's rate of naming accuracy was 55%.

These results show that the context of L2 learning and use has a pronounced impact on how words are mapped onto referents, and on the linguistic criteria employed in the process of name selection. A formal learning context increases reliance on L1 semantic patterns, and consequently is linked to a higher rate of non-native-like word choices. The level of proficiency, as measured by a standardized test, does not have discriminating power in this respect. On the other hand, low L2 proficiency does not preclude the possibility of acquiring meanings that do not have direct translation equivalents in the L1 (Pavlenko 2011a). The use of *close friend* by the students shows that although the category is lexicalized differently in English, where it does not have an independent lexeme, it was mastered successfully

by a proportion of the student sample. The category's frequency of occurrence was very low, though.

The failure of the vast majority of participants to demonstrate native-like naming behaviour is congruent with the view expressed by Malt and Ameel (2011), who contend that mastering the subtleties of naming in a language is a long process and that L2 learners, who additionally must overcome interference from L1 patterns, rarely achieve monolingual standards.

4.2.7.2. Bilingual categorization patterns in the L1

The most conspicuous feature of the immigrants' L1 is its stability and resistance to L2 influence. This can best be seen in the lack of statistical contrasts between the frequency counts for the monolingual and expatriate samples and in high levels of agreement with the monolinguals (77%). There were, however, differences from the monolingual control group, mainly in the choice of dominant names and in category ranges. Because of this, *kolega* was assigned to *purely professional* and *close but not intense* relations, while *znajomy* and *przyjaciel* expanded their category ranges. These processes are indicative of ongoing category restructuring, leading to the blurring of categorical differences and an indiscriminate use of the three terms to refer to the same situation. Also of note is the emergence of *współpracownik*, a counterbalance to *colleague*, and a number of misnomers such as *poradnik* and *powierzyciel*. The latter signify a weakening of the L1, albeit on a small scale. In general, the data show little evidence of direct transfer from L2 English. Its most obvious sign is a tendency to avoid *kolega,* where the L2's influence is both phonetic and semantic, and the expansion of *znajomy*, most likely by analogy to *friend*.

Contrary to expectations, the students' naming choices diverged more sharply from those of the monolinguals, with *znajomy* becoming the most popular word and a kind of a cover-all term, much in the vein of *friend*. The data also demonstrated a weakening of semantic distinctions between the three words, which tended to be used interchangeably. Overall, however, the students exhibited a high level of agreement with the monolinguals, as revealed by the agreement rate (82%), and were minimally more accurate than the expatriate sample. The total number of non-native names in the questionnaire was 72 and 82 for the immigrants and students, respectively. As far as direct influence of L2 English is concerned, it can be identified predominantly in L2-motivated blends, i.e. *współstudenci*. The indirect signs are the weakening of semantic distinctions between the terms, the emergence of *współpracownik* to counteract interference from *colleague*, and the popularity of *znajomy*. Worth mentioning in passing is the fact that most of these processes may be hard to detect outside controlled research contexts since the words concerned are semantically related and are hence unlikely to cause a substantial change in meaning if used as alternatives.

In their study of bilingual naming in the domain of drinking containers, Pavlenko and Malt (2011; cf. Pavlenko 2011a) established that the L2 affects L1 lexical categories proportionately to the length of time spent in the L2 environment and can be observed even in late bilinguals who arrived in an L2 country after age 20. This study confirms that such restructuring occurs in late bilinguals, and additionally shows that it can also take place in a formal setting as a function of time devoted to L2 study. Its symptoms may be hard to detect in uncontrolled communication contexts, though.

In interpreting these findings, one should not lose sight of the fact that most of them represent averaged group tendencies whose comparisons may conceal lexical peculiarities exhibited by specific bilinguals. For this reason, every effort has been made to elaborate on the lexical choices of both individuals and groups. Finally, the conclusions presented in this section are based on the assumption that the bilingual mind constitutes a dynamic system of interacting and mutually dependent levels of representation. Consequently, developments in one area are likely to influence all other areas, to some extent at least. This is why such processes have been described as changes, restructuring or differences from monolinguals rather than errors and/or mistakes.

4.2.7.3. The processes at work in the bilingual lexicon

The analysis of inter-group differences with regard to patterns of categorization and general usage of friendship terms has demonstrated that bilingual memory is a platform for cross-linguistic processes that have their source in semantic contrasts between the languages involved. The way these processes operate within and across the bilingual lexicons was described in detail in the sections dealing with particular sample groups and their naming preferences. What follows is a summary of findings on this issue. It starts with an overview of the L2 English data, and goes on to discuss the way the L1 is affected.

Processes operating within the L2 English lexicon:

a. *Category expansion* manifests itself as the tendency to use L2 terms according to the semantic constraints of their perceived L1 equivalents. This is often motivated by phonetic similarity, e.g. *colleague* vs. *kolega,* and results in an overuse of specific words as their meanings are extended to inappropriate contexts.

b. *Category narrowing* involves infrequent use of words, as compared to monolingual norms. Narrowing may result from incomplete acquisition of a word's semantic range. The immigrants' tendency to underuse *acquaintance* is a case in point. Narrowing will also be observed in cases of low codability (Pavlenko 2011a) which occurs when one of the bilingual's languages does not have a direct translation counterpart in the form of a single lexeme. The frequency data for *close friend* show

that both the immigrant and student groups (N = 48 and N = 31, respectively) used the word more sparingly than the monolinguals (N = 62), and that despite the concept's salience in Polish, the term was not readily acquired. In this regard, the context of L2 use is clearly a contributing factor because the immigrants invoked the category noticeably more often. Both expansion and narrowing may result in a category shift, i.e. a crossover to a category that is more compatible with the other language's naming constraints.

c. *Borrowing*. This involves adopting words at the lexeme and lemma level from one language and adapting the lexemes phonetically and morphologically to the language in use. **Compan* 'buddy', as used by the students in L2 English, is an example. It must be stressed that borrowing involves the adoption of an entire category and is a prominent form of cross-linguistic influence.

d. *Semantic transfer*, whereby L2 words receive the meaning of the perceived L1 equivalent. For instance, in S15 targeting *znajomy*, the dominant category name in the student group was *acquaintance* (N = 22), which was applied in accordance with the semantic characteristics of *znajomy*. This has been made obvious by the context set up by the scenario where *znajomy* collects the narrator's child from school, a favour few English people would ask of an *acquaintance*.

e. *Calquing,* whereby the meaning of an expression is mapped to meaning in another language, giving rise to a non-existent item. **Virtual friend* for an online friend is an example of a calque from Polish.

f. *Creation of coinages*; that is, non-existent English phrases, e.g. **study mate*, **party mate* and **confessioner.*

g. *Emergence of a new dominant category* that is rarely invoked by English monolinguals. There is only one instance of a new dominant category name in the English dataset, that of a *mate.* It was used by the immigrants in response to a distractor scenario targeting *buddy*.

h. *Semantic indeterminacy,* as exemplified by S14, where the student group produced a bunch of words including *friend* (N = 7), *companions* (N = 6), *colleague* (N = 5), *mate* (N = 5), *acquaintance* (N = 3), *buddy* (N = 1), *partner* (N = 1), *campmate* (N = 1), and *holiday mate* (N = 1) in response to a scenario that elicited a clear dominant category from the monolinguals, i.e. *friend* (N = 23). Tested in L1 Polish, the subjects did not produce a dominant name either, with answers distributed evenly across *kolega* (N = 12) and *znajomy* (N = 12), and two other minor categories. This suggests that semantic indeterminacy in the L1 may extend to the L2, even when the L2 has a salient naming pattern.

i. *Successful acquisition* of L2 friendship terms despite cross-language semantic differences in this area. This is evidenced by the high rate of agreement with the English monolinguals, which reaches 72%. On the other hand, only one out of 60 bilinguals participating in the study demonstrated 100% native-like naming preferences in the test, while the vast majority of respondents stopped somewhat short of the monolingual benchmark. Such a tendency puts the bilingual success story in perspective.

Processes observed in L1 Polish:
The data for L1 Polish demonstrate that the first language of adult bilinguals is vulnerable to restructuring regardless of the context of its use. The changes may be subtle, however, and difficult to detect outside research contexts. Particularly surprising in this respect are the naming preferences of L2 university students who, according to previous research (Pavlenko 2005), are less likely to significantly diverge from monolingual norms. The fact that they do in this study sheds a new light on bilingualism developed in a formal academic setting. It also offers a rationale for discussing phenomena observed in one language from the perspective of a joint L1 and L2 system. The list below presents the processes observed in the Polish dataset.

a. *Fading of semantic distinctions between categories.* The process can be detected in the lexical categorization patterns exhibited by both bilingual groups. It is certainly at work in Scenario 2, where the immigrants produced three contrasting names as equivalents, i.e. *znajomy* (N = 10), *przyjaciel* (N = 10) and *kolega* (N = 8), despite perceiving the scenario as denoting *close but not intense* (N = 14) and *social* (N = 11) relations. In English, their naming choices were more homogeneous since the majority opted for *friend* (N = 21).

b. *Emergence of new dominant categories and change in the status of the existent ones. Współpracownik* has acquired prominence as a dominant category name. This may have stemmed from the need for a specialized term along the lines of *colleague*. In the student sample, *znajomy* has become the most frequent word with the widest range of semantic attributes, very much like *friend* in the monolingual English dataset. While the reasons for this change cannot be attributed to the semantics of *acquaintance*, we cannot rule out the possibility that the neutrality of *friend* in terms of relationship intensity made it a compatible template for *znajomy.* Notably, the students did not perceive the word as conveying a sense of distance.

c. *Semantic extension as well as creation of blends and non-existent words*, such as **współrozmówca*, **współstudenci* and **powierzyciel*. Semantic extension is evident for **poradnik*, which was used with the meaning of *advisor*.

d. *Avoidance* of *kolega* manifesting itself as a lower word frequency in contexts where the monolinguals used it more often. The underlying cause may be a narrowing of the category induced by *colleague* and gradual convergence towards L2 norms.

4.2.7.4. The L2 and L1 in natural and formal L2 learning contexts

A by-product of the study is the possibility to evaluate the effectiveness of L2 vocabulary learning in two qualitatively different contexts, and to assess the impact of contextual factors on L1 and L2 vocabulary use in a domain demonstrating cross-linguistic contrasts. The added advantage of the analysis is that the respondents had a comparable level of proficiency (C1, $t(53.61) = 0.74$, $p = 0.45$), as measured by the

Oxford Quick Placement Test (2001). This singles out contextual factors as a major inter-group variable that may account for differences in the respondents' output.

Generally, both groups express naming preferences that are different from those of English monolinguals. However, the immigrants are more native-like than the students in this respect. This can be observed in how they use *friend,* whose frequency of use approximates to the value observed for the L1 English users. It is also true of category ranges and core features. What is more, the immigrants are more precise in naming and have therefore applied fewer lexical categories. This translates into a lower rate of expressions that violate English acceptability norms, e.g.**virtual friend* for an online friend[10] and a higher level of agreement with the English monolinguals in the area of dominant names (72%). The percentage is much lower for the student group (55%). Considering the number of situations where each bilingual produced the same name as the monolinguals, i.e. *agreement with English monolinguals by person*, an independent samples t-test conducted to compare agreement levels between the student (mean = 15.20, SD = 3.21) and immigrant (mean = 16.73, SD = 2.43) groups showed that the immigrants differed significantly from the students ($t(58) = 2.08$, $p = 0.04$, $r = 0.26$), and thus were more monolingual-like in their choice of words. This finding accentuates the difference between L2 learning outcomes in a natural and formal setting.

As regards the bilinguals' L1 Polish, there is a remarkable congruence between the immigrant and student groups in the area of categorization ($p = 0.57$, Fisher's exact test), the level of agreement understood in terms of general name distribution patterns (91%) and the frequency of use of specific friendship terms ($\chi^2 = 3.81$, $df = 2$, $p = 0.14$). Also, there are no significant differences between the scores signifying agreement with monolinguals ($U = 377.5$, $p = 0.27$), although the results suggest that the immigrants (Mdn = 20.00) were minimally more accurate than the students (Mdn = 19.00), despite their limited exposure to the L1.

By comparison with monolingual Poles, the immigrants did not differ statistically in terms of categorization patterns or frequency of word use. The analysis of the forms produced by each respondent showed that they used fewer non-native-like forms (N = 72) than the students (N = 82), and were *more Polish* in their naming behaviour. It must be said, though, that their category structure was *not quite Polish* because it showed traces of English influence. As for the students, not only were they less accurate in naming, they also demonstrated a statistically significant difference from monolingual Poles in the word frequency count ($p = 0.03$, Fisher's exact test). Although this did not affect categorization patterns in the sample, it revealed a major preference for *znajomy* and a concurrent levelling of differences between the names under study. Such levelling was observed in the immigrant sample, too, but on a smaller scale, and may have resulted from a relativization of word meanings in the L1. The students clearly showed a preference for a neutral

[10] **Virtual friend* was used only once in the bilingual groups.

term that did not convey sharp contrasts or require semantic scrutiny, much like the English *friend*. Such indifference to semantic distinctions may be linked to the need to pay increasingly more attention to the L2, though, rather than being a function of the context of language use. In a sense, this finding corroborates the conclusions of Ewert's (2009) research into aspects of L2 users' knowledge of the L1. She found increased awareness or hypersensitivity to L1 standards in areas such as syntax and morphology and a somewhat more relaxed attitude to vocabulary whose usage is less constrained by prescriptive norms. Future research should clarify this issue by additionally looking into the respondents' rationale for using specific words as category labels, which will enable researchers to better understand the complexity of the processes involved in naming.

Summing up the findings for both languages, it becomes clear that the student and immigrant samples represent two linguistically distinct populations. The students' naming preferences diverge from those of Polish and English monolinguals and are more pronounced than the contrasts observed in the immigrants who are not completely native-like, either. A plausible explanation for this result is that learning an L2 in the abstract and without direct reference to culture-bound referents and values may result in a relativization of word meanings in both lexicons. The L1 lexicon will be affected, albeit to a lesser extent, by being exposed to differing patterns of lexical categorization in the L2, while the L2 will suffer from inadequate exposure, lack of contextual backup and strong L1 influence. The end product will be in-between behaviour that is not quite monolingual-like. The immigrants' performance on the tests underscores the significance of context-embedded learning of languages. It must be stressed, though, that to fully understand their naming behaviour, it may be necessary to extend the scope of the investigation beyond linguistic variables.

4.2.7.5. Factors influencing naming patterns in bilinguals

The role of linguistic and sociolinguistic factors in the process of verbal categorization has been investigated with reference to the context of L2 use, i.e. formal academic vs. natural immersion. The main factor of significance in immersion learning turned out to be proficiency in the L2, which not only correlated with the agreement with English monolinguals variable, but also proved to be a predictor of naming accuracy in the regression analysis.

The cognitive weight of L2 proficiency has been emphasized by numerous studies in the field, with Pavlenko (2011b) and Athanasopoulos (2011a) being the most recent contributors to the debate. Athanasopoulos (2011a) stresses the need to rigorously evaluate proficiency with a general proficiency test and an additional measure designed to test the language point(s) under investigation. This general testing requirement has been met in this study since it used the same proficiency test as Athanasopoulos (2006), namely, the *Oxford Quick Placement Test* (2001).

As regards testing specific knowledge of friendship terminology in English, the idea of using an elicitation test prior to the research was abandoned due to the saliency of the notion in both lexicons and the subjects' advanced knowledge of the L2.

Some of the studies exploring the interface between linguistic patterns and underlying cognitive models (Athanasopoulos 2006; Athanasopoulos and Kasai 2008) did not identify the length of stay in an L2 environment as a significant correlate of categorization in bilinguals. In this study, too, the length of stay did not influence L2 categorization patterns statistically, despite the fact that the research considered subjects with a length of stay of 2 years and more, and despite its focus on abstract partial equivalents that are acquired through interaction and cultural immersion. A preliminary reading of the result may suggest that in some domains, e.g. naming and grammatical number (Athanasopoulos 2006), L2 proficiency is a more potent factor than cultural immersion, while in others, e.g. colour, (the length of) exposure to the L2 overshadows other aspects (Athanasopoulos 2009).

The length of stay variable was negatively correlated with agreement with monolingual Poles, however, which suggests that it has an adverse effect on categorization in the L1. Findings to this effect have been obtained by other researchers, e.g. Laufer (2003), and more recently, Athanasopoulos (2009), and Pavlenko and Malt (2011). The latter investigated L1 Russian lexical categories in the area of household objects. Their subjects were L2 English users who differed in terms of the age of arrival in the US, and consequently, in the amount of exposure to authentic L2 English. Of the three groups distinguished by the researchers, i.e. early, childhood and late bilinguals, the strongest L2 effects in L1 Russian were found for the early bilinguals with 13–18.5 years' residence in the US, and the weakest for the late arrivals who had stayed in the US for 5 years on average. The fact that L2 effects were found in the L1 of mature individuals who arrived in the L2 country at the age of 19 and later, demonstrates the vulnerability of the L1 and the dynamism of the evolving bi-competent language system.

None of the above variables, nor indeed, those examined in this study proved to be of significance in the student group. The only correlation nearing significance ($p = 0.052$) was that between the length of L2 study and agreement with monolingual Poles. As the correlation is negative ($\rho = -0.358$), there is some indication that the amount of time spent in conscious L2 improvement may affect categorization in the L1, even if the L2 is learned formally. To uncover meaningful dependencies affecting categorization in a formal setting, future research needs to examine larger samples and base the assessment of L2 proficiency on production data because this is where the causes of the differences between the student and expatriate samples are likely to be found.

4.2.7.6. On the application of Natural Semantic Metalanguage and linguistic analyses in research into semantic and conceptual levels

The rationale for incorporating the NSM approach into the study of cross-linguistic semantic/conceptual contrasts is tied to the approach's central tenet that NSM explications illustrate cognitive scripts behind particular words and hence reflect the words' underlying conceptual models (Wierzbicka 1999). In practice, the explications attempt to paraphrase the human thoughts and/or inner speech that are evoked by specific word meanings. From a lexicographic point of view, NSM explications provide a wealth of semantic detail that is both relevant and accurate. This has been exemplified by the explications at the core of this study: they have been found remarkably precise. More specifically, the word frequency counts conducted for each participant group show that the targeted friendship words in Polish and English far outnumber other categories in the elicited datasets, both monolingual and bilingual. Moreover, in the monolingual groups only three scenarios did not elicit their NSM targets as dominant words, i.e. S12 targeting *buddy*, and S1 and S21 aiming at *acquaintance* and *znajomy*, respectively.

Nevertheless, for the sake of precision, it is necessary to draw a distinction between the explications and the scenarios constructed on their basis for the purpose of cross-linguistic analysis. As regards the former, this study did not set out to test the accuracy of the explications in a direct manner. This could have been done by using the explications themselves as stimuli for lexical responses from Polish- and English-speaking individuals. Being couched in semantic primitives, the English templates could have been translated into the Polish NSM without addition or loss of meaning, and subsequently applied in an elicitation task. However, the project's aim was to evaluate the argument that linguistic categories in the L1 influence the L2's linguistic categories via the underlying conceptual patterns. Because of this, the approach adopted here was that word meanings and related concepts could be accessed and researched through scenarios depicting typical contexts of their use. The information contained in the NSM explications was used to outline the conceptual/semantic frames for each target and for the scenario built around it. In the course of developing materials, it turned out that more detail was needed to diversify the contextual content of the scenarios. Consequently, they contain cultural information that extends beyond the NSM template. Moreover, as explained in Section 4.1, the stories modelled on *acquaintance* used a number of online dictionary definitions as frames of reference and proved to be as effective as those patterned on the NSM, most likely because they followed the NSM pattern. A potential weakness of the scenario technique, and indeed of the explications themselves, is that construal of meaning is subject to individual variation, which makes it impossible for linguists to construct universally applicable word definitions and contexts for word use. A solution to this problem is to study group preferences. It should also be noted that despite or perhaps because of being composed of semantic primitives, not

all explications are transparent enough to warrant successful identification of the meaning they denote. In other words, because of ambiguity, not all explications are likely to activate the meanings and concepts they are hypothesized to represent. This is not the case with scenarios because they are not subject to compositional constraints and can be rendered accurate through piloting and refining procedures, depending on researchers' needs and circumstances.

The question that this part of the study does not answer is whether the NSM mirrors conceptual representations. Under the NSM theory, access to the conceptual level is ensured by the NSM's building blocks, i.e. semantic primitives, which embody conceptual primitives. Yet this contention can only be defended if one accepts that the semantic and conceptual levels are one and the same level of representation. Wierzbicka (1999, 2005) argues convincingly that hard evidence for the unity of the two levels emerges from the testimony of bilingual immigrants whose ways of conceptualizing and expressing reality changed dramatically once they became immersed in a new language and culture. Intuitively, such reasoning is difficult to dismiss. There is, after all, objective and subjective evidence implicating the involvement of language in inner speech and autobiographic memory, to the effect that the language of encoding, being tied to representations of experience, is capable of activating culture-specific imagery and scripts (Pavlenko 2011a). These are often at odds in bilinguals, which misleadingly augments the subjective impression that thought is linguistic. That this does not have to be the case is demonstrated by the universal experience, shared by monolinguals and bilinguals alike, of finding it difficult or impossible to express in words what one thinks and feels or has witnessed. Examining this issue from an empirical perspective, Malt and Ameel (2011: 174) comment as follows: "[…] we see no a priori reason to assume that language output requirements affect the many non-linguistic processes involved in experiencing and acting on the world – such as taking in and interpreting sensory input, storing results of that interpretation in memory in rich detail beyond that captured in linguistic description, and drawing inferences using the stored interpretation." They also refer to their earlier research into naming (Ameel et al. 2005; Malt et al. 1999) and observe that naming diversity does not reflect non-verbal similarity judgments, which are fairly uniform. Thus, research into the naming of concrete objects sheds light on lexical and semantic knowledge but not on non-linguistic concepts.

An intriguing void in this interpretation has emerged as a result of Pavlenko's (2003) study of how the word *privacy* is used by Russian-English bilinguals in L1 Russian narratives. Russian does not have a translation equivalent of the word. Pavlenko found that the majority of the Russian subjects did not make an effort to refer to privacy at all, and instead focused on other topics. The few who did not only used the word but also clearly invoked the idea behind it. For them, abstract *privacy* was a living idea that was worth talking about. Does this mean that those who did not use the word did not develop a concept for it, either? Even though the answer to the question requires extensive research, a few hints may be derived from

theories of grounded cognition. Barsalou and Wiemer-Hastings (2005: 133) claim that "direct experience of abstract concepts appears central to their content." The second factor of significance for the activation of abstract concepts is the availability of context, i.e. situation availability. It follows that abstract concepts acquire an identity through experience and in specific situations, and that language may only play a secondary role in the process, although it remains an operational channel for expressing their content and structure. Certainly, using a word is not synonymous with having a concept for its meaning. On the other hand, once a concept has been developed it can be reached through the linguistic channel. Since linguistic relativity and related frameworks are concerned with whether linguistic categories mould non-linguistic cognitive processes, they naturally seek access to non-linguistic representations, which for the sake of comparison are studied in linguistic and non-linguistic conditions. Frameworks whose interests lie outside the relativistic debate probe conceptual representations via language because interference from linguistic categories does not pose a threat to the validity of their explorations.

Coming back to the objectives of the current project, it may indeed be difficult to demonstrate that the semantic categories elicited through the scenarios affect and/or reflect the underlying conceptual patterns. This is because the monolingual participants showed an astonishing degree of agreement of over 95% in Test 2, which evaluated each scenario against broader semantic criteria. A cursory reading of this finding would be that the participants' perception of the scenarios was uniform despite the fact that their naming choices in Test 1 were much more diverse and reflected the semantic attributes of the researched categories in the respective languages. The interpretation advanced in this study is that Test 2 cancelled the effects of the semantic distinctions activated in the naming task because semantic categories are independent of each other and remain constrained by their own boundaries. Consequently, neither test provides grounds for the conclusion that semantic distinctions reflect categories of non-linguistic cognition.

The issue is compounded by research findings showing a close reliance of abstract concepts on language (Casasanto 2009). Indeed, how else could one convey the nuanced contrasts between a very close and personal relationship and one that is close but less intense? Semantically simple, such differences may prove a challenge for non-linguistic forms of communication. From an empirical perspective, this implies that in some cases it may not be possible to by-pass language *en route* to the underlying concepts. The implementation of this proposal is described in the second part of this study.

4.3. Study 1b

4.3.1. Research objectives

The primary concern of Study 1b is to ascertain to what extent, if at all, semantic naming distinctions correlate with categorization patterns in tasks that either apply non-linguistic criteria of categorization, e.g. similarity judgments in a free sorting task, or implement categorization according to broader lexico-semantic criteria which are different from those laid down by the words under study. The existence and strength of significant correlations will show whether the observed linguistic patterns may be taken to reliably reflect related conceptual models, and thus form an empirical basis for the evaluation of the Conceptual Transfer Hypothesis.

The position adopted throughout this work is that the Conceptual Transfer Hypothesis has been couched in terms that entail recourse to linguistic relativity. Simply put, claims that linguistic categories of one language influence concepts linked to another language need to be verified by demonstrating that linguistic structures are capable of influencing non-linguistic cognition in the first place. Evidence to this effect has been reported mainly for unindividuated perceptible referents, such as substance, colour, and space (Levinson 2003a; Lucy and Gaskins 2003; Roberson et al. 2008). No effects on non-verbal behaviour have been found in studies of naming in the field of household objects (Ameel 2005; Malt and Ameel 2011). This suggests that language plays a more pronounced role in perceptible yet functionally indiscriminate areas where its semantic categories may provide organizing frames for otherwise indeterminate experience. This same principle should, by extension, apply to abstract words which lack observable referents. One study in particular is of note here. Coley and Sachs (2006) compared lexicalization patterns of envy and jealousy in Russian and English and found that semantic contrasts had no bearing on similarity judgments in free sorting and triad matching tasks. A similar issue is addressed in the present study whose main concern is whether categorization in terms of available lexical labels has an impact on categorization in terms of similarity. The underlying assumption is that scenarios labelled the same in a naming task will be placed in the same category in a free sorting test if the linguistic and non-linguistic patterns of categorization overlap. This prediction is consistent with initial evidence obtained from research into conceptual metaphor (Casasanto 2009). It indicates that non-verbal judgments about abstract entities and unseen object properties correspond to linguistic patterns, while those made about visible stimulus properties diverge from such patterns. Consequently, the study seeks to answer the following question:

1. (To what extent) do the observed linguistic naming patterns overlap with the underlying conceptual models?

4.3.2. Participants

The subjects of the study were 30 first-year students of the University of Silesia attending a teacher training course at the English Department. Their level of proficiency was assessed with the *Oxford Quick Placement Test* (2001) and ranged between the B2 (N = 22) and the C1 (N = 8) levels. None of them had stayed in an English-speaking environment for more than a month. The students also had elementary to lower intermediate knowledge of German, which they studied in secondary school and at university. Because the study did not examine cross-language comparisons, it was not considered essential to restrict it to monolinguals.

4.3.3. Materials

Based on the NSM composition for the Polish friendship words, 9 scenarios were selected to form a new questionnaire for the *conceptual* component of the study. In the case of *przyjaciel* and *kolega,* the scenarios elicited the top three scores for each category from Polish monolinguals and thus showed the least variability of answers and the strongest linguistic effects. As regards *znajomy*, the scenarios were less accurate since S21 missed the NSM target. Consequently, two of the scenarios for *znajomy* had a score of over 60% of the categories' dominant name score, while the third one gained the top score. The strength of the naming effects exhibited in Study 1a was hypothesized to spill over into the sorting test.

Because it was necessary to change the numbering of the scenarios, as used in Study 1a, what follows is a list of items in the questionnaire, together with their corresponding numbers. The questionnaire was implemented in Polish.

Przyjaciel

> (S1) We went to school together and lived in the same street. On Saturdays we would first meet in the playground, and then, a few years later, on the tennis court. Now we often go to our local for a chat. There isn't a thing we wouldn't know about each other.
>
> (S4) We often talk on the phone or on the Net. Our conversations are very honest and deep; sometimes they remind me of going to confession.
>
> (S9) She/he is one of the few people I trust and often discuss my problems with. I admire his/her experience and disinterested wisdom.

Kolega

> (S2) For five years, we have been meeting at university where we do the same degree course. We sometimes study for exams together and in our free time, i.e. quite rarely, we go to the cinema.

(S6) For several years we've been going to ski camps together. In fact, all of us started from scratch and had many adventures on the ski slopes and routes. We enjoy skiing together.

(S10) We are classmates and often stay after school to do our homework together. There are five of us in all and we enjoy studying together.

Znajomy

(S3) We meet when walking our dogs and often have a chat while our pets chase each other on the grass. This is how I hear the news about the people living in the area.

(S5) We met at a conference where we were seated next to each other at the conference dinner. After an interesting conversation we exchanged business cards.

(S8) Our kids are classmates and we often meet at parents' meetings or when collecting them from school. Sometimes, when I have to work overtime, she/he walks my son home for me.

Two distractor items were also included, both with a focus on *neighbour*, i.e. S11 and a new situation which read as follows:

(S7) Chociaż mieszkamy na tym samym piętrze widujemy się raz w miesiącu lub rzadziej 'Although we live on the same floor we meet once a month or less'.

In addition, the participants were requested to complete Test 2, as implemented in Study 1a (see Appendix).

4.3.4. Procedure

The first stage was a free sorting task. The participants were presented with a list of unnumbered scenarios which they were to put into categories on the basis of their similarity. The instructions for the task read as follows: *Mark with the same letter, i.e. A, B, C, and so on, situations which in your opinion are similar to each other/one another.* The participants were free to form as many categories as they saw appropriate. The order of the scenarios was randomized and the participants were not aware of the purpose of the study. The free sorting task preceded the other two tests that required explicit verbalization. It was hoped that implementing the sorting task first would help avoid drawing the respondents' attention to specific linguistic criteria, thus reducing the extent of subvocal verbalization. A decision

was also made not to include triads matching in the study since, as mentioned in Section 2.1.3, the binary choice enforced by the structure of the task did not always accurately reflect the categorization choices of the respondents who, if given the chance, might have opted for a different answer. What is more, the piloting stage for the triads task produced inconsistent results. The sorting test was followed by the naming task and Test 2, which were implemented in the same way as described in Study 1a. The respondents were given 45 minutes to complete all three tests. They were also allowed to sign the test sheets with a fictitious name to ensure anonymity. The background questionnaire and the placement test were completed the following week.

4.3.5. Analysis

To compare the similarity of the participants' categorization choices in the three tasks, the situations that were placed in the same category were combined into pairs. For example, if scenarios 1 and 4 elicited the name *przyjaciel*, they were placed in the same verbal category under the label 1,4. If these two scenarios were marked with the same letter in the free sorting task, they were obviously in the same category, too, which was considered to be a measure of similarity between verbal categorization and sorting behaviour. For the sake of precision, the pairing of the situations from the sorting test was carried out using an Excell macro created for this purpose. The pairs were then tallied and the tallies for each pair were correlated with those for the equivalent pairs in the other two tasks. The mode of analysis developed for this study is partly modelled on Malt et al. (1999). The Shapiro-Wilk test was run to assess the distribution of the data. Since they did not follow normal distribution ($W > 0.19$, $p = 0.000$) in all three tests, non-parametric Spearman's rank-order correlations were computed. The alpha level was set at 0.05 or less.

4.3.6. Results and discussion

In the free sorting task, the subjects created six categories marked from A to F. Category F contained just one scenario (S7) and was subsequently excluded from the analysis. The sort yielded 42 pairings of scenarios, the most frequent of them being 4,9 (N = 30), 1,4 (N = 25), 1,9 (N = 25), 8,11 (N = 23), 10,2 (N = 20), 2,6 (N = 16) and 5,7 (N = 16).

The naming task elicited four main groupings, i.e. (1) *przyjaciel* (N = 84), (2) *kolega* (N = 83), (3) *znajomy* (N = 108) and (4) *sąsiad* (N = 45). There were also infrequent cases of **współmieszkaniec* '*co-habitant' (N = 1), *obcy* 'stranger' (N = 3), *informator* 'informer' (N = 1), *pokrewna dusza* 'kindred spirit' (N = 2), *autorytet* 'authority' (N = 3), *rodzic* 'parent' (N = 2), and *kumpel* 'buddy' (N = 1). *Kumpel*

did not form pairs with any of the elicited words. All of the scenarios elicited their targets, which constituted about 70% of each category's elicited name set, and thus were the dominant names. The exceptions were S11 for *sąsiad* 'neighbour' and S6 for *kolega,* where variability of naming was higher. Consequently, the targeted words received a score of 17 (56%) and 19 (63%), respectively. As regards the observed categorization patterns, there were 38 scenario pairings altogether. The most frequent ones included: 4,9 (N = 26), 1,4 (N = 24), 1,9 (N = 21), 10,2 (N = 21), 10,6 (N = 21), 5,8 (N = 21), 3,5 (N = 19), and 7,11 (N = 19).

Test 2 served as a control for the naming task and produced a clear response pattern for S1, S4 and S9 (*przyjaciel* 'close friend'), which were classified as *very close and personal* by between 25 and 30 respondents (83% and 100%, respectively). S5 for *znajomy* was evaluated as *purely professional* (N = 25) by the majority of respondents, too. There was more variability in the responses to the remaining situations, of which S6 and S11 showed the highest discrepancy, with scores falling in between *close but not intense* (aprox. 50%) and *purely social* (aprox. 50%). These differences found a reflection in the naming patterns reported for the sample (see above). Overall, the test produced 38 scenario pairings, the most frequent being: 4,9 (N = 27), 1,9 (N = 25), 1,4 (N = 23), 10,2 (N = 20), 10,8 (N = 12), 2,6 (N = 12), 2,8 (N = 11), and 2,11 (N = 11).

Spearman's rank-order correlations computed for the three tests revealed strong positive correlations between all of them ($\rho > 0.50$, $p = 0.000$). However, when particular categories were correlated across the three conditions, the analysis revealed contrasts both within and between the tests. In the free sorting task, the strongest categorization pattern was found in Grouping A containing S1, S4 and S9 for *przyjaciel*, which received the highest score in the test, and a few pairings with *kolega*. Grouping A was negatively correlated with Grouping E containing relationships based on limited social contact ($\rho = -0.36$, $p = 0.01$). This shows that the groupings were decidedly different in terms of content (see Table 13). The other three groupings were positively correlated with each other and highly significant ($\rho \geq 0.45$, $p < 0.001$). They contained pairings of *znajomy* with the other terms, except that in Grouping B the dominant pairings were those for *kolega*. In the naming task, the respondents created four different lexical categories, each bearing the label of either *przyjaciel, kolega, znajomy*, or *sąsiad.* The category for *przyjaciel* was negatively correlated with *znajomy* ($\rho = -0.40$, $p < 0.05$), indicating that the two words encompass significantly different semantic ranges. The comparison of the two tests showed very strong and highly significant similarity between Grouping A in the free sort and *przyjaciel* in the naming test ($\rho = 0.60$, $p = 0.000$), and a less intense yet significant correlation between Grouping A and *kolega* ($\rho = 0.29$, $p = 0.04$). Although this result is somewhat surprising, it suggests that the situations in Grouping A could be named both *przyjaciel* and *kolega*, with the latter being much less likely, though. *Kolega* did not correlate significantly with any of the other categories. *Znajomy*, by contrast, correlated significantly with all of them ($\rho \geq 0.29$, $p < 0.05$), excluding

Table 12. Spearman's correlation coefficients for the linguistic tests

N = 48	Przyjaciel	Kolega	Znajomy	Sąsiad	Vey close	Close but not intense	Social	Professional
Przyjaciel rho	n/a	ρ = −0.17 p = 0.25	ρ=−0.39 p=0.005	ρ = −0.09 p = 0.51	ρ = 0.72 p = 0.000	ρ = −0.46 p = 0.001	ρ = −0.19 p = 0.19	ρ = −0.07 p = 0.59
Kolega rho	ρ = −0.17 p = 0.25	n/a	ρ = 0.17 p = 0.24	ρ = −0.21 p = 0.13	ρ = −0.12 p = 0.41	ρ = 0.58 p = 0.000	ρ = −0.13 p = 0.35	ρ = −0.03 p = 0.83
Znajomy rho	ρ = −0.39 p = 0.005	ρ = 0.17 p = 0.24	n/a	ρ = 0.25 p = 0.08	ρ = −0.46 p = 0.000	ρ = 0.30 p = 0.04	ρ = 0.44 p = 0.001	ρ = 0.25 p = 0.08
Sąsiad rho	ρ = −0.09 p = 0.51	ρ = −0.21 p = 0.13	ρ = 0.25 p = 0.08	n/a	ρ = −0.11 p = 0.43	ρ = 0.006 p = 0.96	ρ = 0.50 p = 0.000	ρ = −0.05 p = 0.71

Table 13. Spearman's correlation coefficients for the free sorting task and the linguistic tests

	Grouping A	Grouping B	Grouping C	Grouping D	Grouping E	Przyjaciel
Grouping A rho	n/a	ρ = 0.086	ρ = 0.072	ρ = −0.003	ρ = −0.356	ρ = 0.602
Sig. (2-tailed)		p = 0.562	p = 0.627	p = 0.983	p = 0.013	p = 0.000
Grouping B rho	ρ = 0.086	n/a	ρ = 0.636	ρ = 0.447	ρ = 0.056	ρ = −0.006
Sig. (2-tailed)	p = 0.562		p = 0.000	p = 0.001	p = 0.703	p = 0.966
Grouping C rho	ρ = 0.072	ρ = 0.636	n/a	ρ = 0.487	ρ = −0.032	ρ = 0.093
Sig. (2-tailed)	p = 0.627	p = 0.000		p = 0.000	p = 0.831	p = 0.528
Grouping D rho	ρ = −0.003	ρ = 0.447	ρ = 0.487	n/a	ρ = 0.198	ρ = 0.158
Sig. (2-tailed)	p = 0.983	p = 0.001	p = 0.000		p = 0.176	p = 0.282
Grouping E rho	ρ = −0.356	ρ = 0.056	ρ = −0.032	ρ = 0.198	n/a	ρ = −0.142
Sig. (2-tailed)	p = 0.013	p = 0.703	p = 0.831	p = 0.176		p = 0.335

Grouping A. Within test comparisons showed *przyjaciel* and *znajomy* to be negatively correlated (ρ = −0.39, p = 0.005). *Sąsiad* was positively correlated with *znajomy* (ρ = 0.29, p = 0.04) and with Grouping E in the sorting task (ρ = 0.42, p = 0.003). These correlations (see Tables 12 and 13) show that the two tests summoned different categorization criteria. The sorting task invoked judgments based on the most salient and extreme properties, such as very intense and personal contact (S1, S4, S9) on the one hand, and little or no contact (S5, S7) on the other. Situations involving relationships of moderate intensity were perceived as similar. In the naming task, *znajomy* proved to cover situations involving varying degrees of intensity, except for the most powerful ones, which were assigned primarily to *przyjaciel*, and secondarily to *kolega*. There were no statistically significant positive correlations between the words. Thus, although similar at first glance, the patterns of similarity identified in the two tasks do not match. Nor do the criteria applied in the sorting test reflect those explored in the naming task.

The correlations computed for the sorting task and Test 2 yielded surprising between-task synchrony, with Grouping A correlating significantly with categories evaluated as *very close and personal* (ρ = 0.62, p = 0.000), Grouping B showing similarity to *close but not intense* relationships (ρ = 0.41, p = 0.004), Grouping C aligning with *purely social* relations (ρ = 0.36, p = 0.01), and Grouping D correlating significantly with *purely professional* scenarios (ρ = 0.36, p = 0.01). Grouping E correlated with *purely social* relations as well (ρ = 0.30, p = 0.04). An explanation is in order as regards *purely professional* situations. Originally, they were not targeted

Kolega	Znajomy	Sąsiad	Vey close and personal	Close but and intense	Social	Professional
ρ = 0.292	ρ = −0.254	ρ = −0.243	ρ = 0.617	ρ = 0.058	ρ = −0.188	ρ = −0.033
p = 0.044	p = 0.081	p = 0.096	p = 000	p = 0.696	p = 0.201	p = 0.786
ρ = 0.273	ρ = 0.419	ρ = 0.154	ρ = −0.091	ρ = 0.409	ρ = 0.245	ρ = −0.181
p = 0.060	p = 0.003	p = 0.295	p = 0.538	p = 0.004	p = 0.093	p = 0.218
ρ = 0.024	ρ = 0.331	ρ = 0.252	ρ = −0.024	ρ = 0.209	ρ = 0.360	ρ = 0.024
p = 0.871	p = 0.021	p = 0.083	p = 0.870	p = 0.155	p = 0.012	p = 0.873
ρ = −0.114	ρ = 0.387	ρ = −0.011	ρ = 0.081	ρ = −0.121	ρ = 0.225	ρ = 0.359
p = 0.441	p = 0.007	p = 0.939	p = 0.585	p = 0.413	p = 0.124	p = 0.012
ρ = −0.196	ρ = 0.292	ρ = 0.422	ρ = −0.168	ρ = −0.215	ρ = 0.295	ρ = 0.262
p = 0.182	p = 0.044	p = 0.003	p = 0.253	p = 0.143	p = 0.042	p = 0.057

in the study. However, a few students perceived S5 and S8 (N = 1), as well as S5 and S7 (N = 1) as referring to professional contexts and classified them accordingly. Although these were isolated occurrences, they correlated significantly with Grouping D, which contained both pairings. The conclusion that arises from these results is that linguistic tasks create a platform for linguistic influence that may be general rather than category-specific, and will naturally interfere with non-linguistic assignments no matter how hard researchers try to exclude language-based matrices from input processing. This in turn suggests that the non-linguistic domain cannot be reliably assessed through language-based tests.

Similar regularity was found in the correlations between the lexical categories of the naming task and those of Test 2. More specifically, *przyjaciel* was strongly correlated with the *very close and personal* parameter (ρ = 0.72, p = 0.000), *kolega* correlated with the *close but not so intense* category (ρ = 0.58, p = 0.000), while *znajomy* was aligned to both *close but not so intense* and *purely social* relations (ρ = 0.3 and ρ = 0.44, respectively, $p < 0.05$). The significant correlate for *sąsiad* 'neighbour' was *purely social* relations (ρ = 0.50, p = 0.000). These results are too systematic to be accidental and indicate that semantic categories are the most precise medium of description for other semantic categories.

4.3.7. Conclusion

The results of Study 1b demonstrate a dissociation of categorization in the free sorting task from the semantic categories explored in the naming test. Although the test scenarios elicited uniform naming patterns from the monolinguals in Study 1a, these patterns did not project onto the free sort. The sorting categories are based on highly salient attributes, such as no similarity at all or high similarity. No similarity was found between situations depicting either intense or limited contact, while high similarity typified relationships of moderate intensity. Such distinctions are not conveyed by the friendship terms under study, which rules out the possibility that there might be an overlap between semantic categorization and a semantically indeterminate sort. However, the correlations obtained for the sorting task and Test 2 raise the possibility that other more general linguistic criteria might have been involved in the sorting process. This seems plausible since linguistic contexts activate entire language systems, unleashing a number of context-relevant semantic/conceptual criteria for categorization. It is not unlikely that their interfering influence obscured the identification of the criteria applied in the sorting test.

Initial evidence (Sachs and Coley 2006) from research into the conceptualization of abstract emotion terms demonstrated a dissociation of sorting and triads tasks from naming. This would have been the conclusion of this study, too, had it not been for the application of a second linguistic test as a control, which the Sachs and Coley research did not use. Studies by Casasanto (2009) and Kousta et al. (2009) raise the possibility that abstract/imperceptible entities are more dependent on language for processing and categorization, and hence accurately depict the underlying conceptual frames. The present study does not directly support this conjecture. At the same time, it does not rule out the possibility that linguistic influence on sorting might have manifested itself as interference from more general semantic patterns. As things stand, we have no way of knowing whether these patterns reflect deeper conceptual distinctions.

This finding casts doubt on the usefulness of language-based similarity judgments for research into conceptual categorization on the grounds that they allow for the involvement of semantic criteria other than those targeted by the tests, and thus obscure the character of the obtained similarity patterns. As regards the Conceptual Transfer Hypothesis, the results of this study constitute no straightforward evidence of linguistic influence on conceptual categorization. The inescapable conclusion is that the linguistic relations that are at the core of the hypothesis confine it to language and linguistic processes.

Chapter 5

Study 2: Conceptualization in event construal The case of Polish-English bilinguals

The second strand of inquiry within the framework of the Conceptual Transfer Hypothesis is concerned with pre-linguistic processes of encoding mental representations of experience into linguistic categories for the purpose of verbalization. These processes bear the name of conceptualization and involve generating preverbal messages, i.e. the conceptual/propositional content that the speaker is about to verbalize, drawing on the patterns and perspectives of the language in use. According to Jarvis (2007), conceptualization is inclusive of categorization and naming processes, whereby elements of experience are conceptually categorized and given a corresponding lexical name. In the bilingual context, perceived translation equivalents that are mapped onto non-equivalent concepts are likely to produce what Jarvis terms concept transfer, while differences in the choice of specific concepts for verbalization and their structuring within an utterance are expected to result in the form of conceptualization transfer. Jarvis and Pavlenko (2008) see conceptualization as a domain of conceptual transfer because conceptualization reflects ways of cognizing events and states. Jarvis (2007) also admits that it may at times be impossible to tease apart conceptualization transfer from conceptual transfer proper. This is because the memory circuits that each of them relies on, i.e. working memory and long-term memory, respectively, tend to work together and overlap during online speech production (Carlson et al. 2004). Within the framework of the CTH, conceptualization-oriented research is grounded in the Thinking for Speaking Hypothesis by Slobin (1996) and the paradigm developed by von Stutterheim et al. (2003). Since these theories were developed independently of each other, they are regarded as separate frameworks and have been discussed in Sections 2.2 and 2.3.

Of relevance to the current discussion is the CTH's stance on the extent to which linguistic patterns reflect the underlying pre-speech planning procedures, and on whether it is necessary to probe independent non-linguistic processes to confirm the conclusions reached on the basis of linguistic patterns alone. In the 2011 special issue of *Bilingualism: Language and Cognition* devoted to the hypothesis, the volume

editor (Jarvis 2011: 4) explains that the purpose of the CTH-oriented linguistic research is not "to settle the question of whether cross-linguistic effects arise from language-specific patterns of conceptualization, but rather to examine whether the predicted linguistic consequences of hypothesized differences of these types can in fact be found." In other words, the research does not aim to examine the linguistic and conceptual levels, but instead tests hypotheses about hypotheses about the two levels. It must be pointed out, however, that the volume demonstrates a growing awareness, previously absent, of the importance of probing non-linguistic behaviour in explorations into conceptual phenomena. In fact, some of its articles confirm that certain linguistic patterns do indeed correspond with patterns of attention and recall (Athanasopoulos et al. 2011; Flecken 2011). This stands in sharp contrast to the editor's (Jarvis 2011: 3) contention that "studies on conceptual transfer concentrate mainly on linguistic behaviour."

The present work follows the recommendations of the CTH and looks at conceptualization through the prism of linguistic patterns. This is not to say that it does not recognize the need to probe non-linguistic behaviour in search of conceptual influence both during online processing and in long-term storage. The approach adopted here is to interpret linguistic data against the background of research into the recall of visual input following verbalization, and into the non-linguistic processes that coincide with the execution of language during film/clip retelling tasks, i.e. the direction of gaze and speech onset time. To date, systematic relationships between verbal patterns and non-verbal processes have been reported for PATH endpoints in directed motion scenarios where the endpoint was in view but had not been reached. For example, in an eye-tracking study, German speakers fixated on the endpoint before they started to speak and re-inspected the area while speaking. In a speech onset time test, they did not start to speak until the whole situation had unfolded. The English speakers, by contrast, did not wait for the situation to unfold and did not look at the endpoint before starting to speak (Schmiedtová et al. 2011). Also, unlike the English-speaking subjects, speakers of German verbalized the endpoint and remembered it better in a non-verbal recognition task. Given the consistency of the results (Flecken 2010; von Stutterheim et al. 2009), one can accurately infer the non-linguistic effects of endpoint encoding on the basis of linguistic data alone. It must be stressed, however, that if studied in isolation, processes such as eye movements shed no light on the preverbal procedures that underlie the packaging of conceptual content into linguistic frames. This is why they ought to be examined in combination with non-linguistic referential content and the linguistic patterns invoked to verbalize it. The reasoning behind this procedure is that only by juxtaposing the levels of representation involved in conceptualization is it possible to gain insight into the interactions at the language-concept interface. Seen from this perspective, linguistic explorations into pre-verbal speech-planning procedures acquire a solid empirical basis.

5.1. Study 2a

Based on the above premises, the study presented in this section focuses on the pre-speech planning processes underlying the construal of directed motion events by Polish and English monolinguals and bilinguals. It approaches the subject from the perspective of both Slobin's and von Stutterheim's paradigms, thus constituting a unique research initiative to investigate the conceptualization of motion in its entirety. A novel element is the use of written narratives that were composed offline immediately after viewing the stimulus silent film. This is consistent with Slobin's (2003) opinion that written language exhibits the same patterns of attention as oral retellings. Also, Roelofs et al. (1998) acknowledge the possibility of extending Levelt's *Blueprint for the Speaker* to writing. Moreover, an offline task provides a more accurate account of the mental representations formed on the basis of visual input than online reports which, due to their dynamic nature, show greater sensitivity to perceptual salience effects.

The study is divided into two parts: Study 2a focuses on the selection stage of conceptualization and investigates the inclusion of Path, Manner and endpoint information in the elicited verbalizations. Study 2b is devoted to the analysis of segmentation and temporal structuring.

5.1.1. Selection

The selection phase of conceptualization is the stage where speakers decide which aspects of experience they are going to verbalize in their forthcoming utterance. Although originally regarded as free from linguistic influence, selection has been shown to be affected by the presence or absence of grammatical aspect (Bylund 2011b; Schmiedtová et al. 2011), as well as preferred lexicalization options in the domain of motion (Papafragou et al. 2006). This in turn implies that the selection stage is subject to language-specific constraints. Since Slobin's (1996) Thinking for Speaking Hypothesis views conceptualization as a process of selecting conceptual content for expression through linguistic categories, it offers a clear blueprint for analysing the dynamics of the process.

In directed motion events, the selection of information is implemented according to the prominence of the following factors: Figure, Ground, Motion, Path, Goal,[1] Manner and Cause (Ungerer and Schmid 2006). Not all of them, however, are given equal weight cross-linguistically, with languages diverging along the Path/Manner/Goal divide (Slobin 1996). Consequently, in a most basic way,

[1] Following Talmy (2000), Ungerer and Schmid (2006) do not regard the Goal/endpoint of Path as a significant component of motion events. It has been considered in the present study because of its role in conceptualization processes, and because of the study's focus on directed motion towards a Goal.

languages can be divided into those that encode MANNER in the verb and PATH in the satellite (satellite-framed languages), and those where verbs prioritize PATH, relegating MANNER information to an optional adjunct (verb-framed languages). As mentioned above, this basic scenario may be obfuscated by grammatical aspect (von Stutterheim and Nüse 2003) and Aktionsart (Aske 1989), both thought to determine whether an event is presented holistically with an endpoint, or as an open-ended unit of conceptual content. For a detailed discussion of these issues see Sections 2.2 and 2.3.

In the case of Polish and English, the situation appears to be uncomplicated. Both are satellite-framed languages encoding MANNER in the verb and PATH in the satellite, and both are aspect languages that construe present events as ongoing and unbounded, thus excluding their terminative phase. Despite these broad typological similarities, the languages diverge from each other on key aspects of form. This is because their aspectual categories are not exactly identical since the English progressive is not synonymous with the Polish imperfective (see Study 2b). Moreover, in Polish, PATH information is encoded in the verb through a prefix and in a PATH prepositional phrase. In English, the expression of PATH information is solely the domain of prepositional phrases. In the light of these intra-typological differences, a question arises as to whether they lead to contrasts in the amount of MANNER and PATH information conveyed by each of the two languages, and whether these contrasts influence the conceptualization patterns exhibited by bilinguals. A related concern is whether Polish, like English, shows a tendency to present events as ongoing/uncompleted, thus leaving them without an endpoint. It is assumed throughout this study that the obtained encoding matrices are the product of conceptualization, and as such reflect the underlying conceptualization patterns. Considered in combination with non-linguistic visual data, they constitute grounds for informed predictions about speech-planning processes and also form a basis for future (non-linguistic) explorations in the area.

5.1.2. Research objectives

The main objective of this research is to investigate conceptualization through the prism of selection processes hypothesized to determine the conceptual and semantic content of an upcoming utterance. In the case of directed motion events, selection is carried out in terms of the lexico-syntactic encoding options that vary across languages in that they highlight different components of motion. Differences between languages from the same typological group appear to be much subtler. In consideration of the tendencies reported for Polish and English, the study seeks answers to the following questions:

1. What are the similarities and differences between the way Polish and English monolinguals encode directed motion events in a narrative?

2. Does Polish differ from English in the frequency of encoding endpoints in GOAL-oriented motion?

3. Do Polish-English bilinguals follow the patterns of their respective languages, as exhibited by monolinguals, or do they diverge from the monolinguals in a significant way?

4. Do bilinguals demonstrate convergent or divergent conceptualization patterns in their languages?

5. Does the setting of L2 learning and use have an impact on conceptualization patterns in bilinguals?

6. Which background variables influence the process of content selection in a bilingual's languages?

7. To what extent are the elicited lexicalization patterns informative of related pre-speech conceptualization processes?

The study also provides an opportunity to test the following predictions put forward in Section 2.2.6.

1. Polish users of L2 English prioritize PATH at the expense of MANNER verbs in L2 English. This manifests itself as a preference for PATH-only verbs.

2. Polish users of L2 English use fewer MANNER verbs than Polish monolinguals and additionally express MANNER information in an adverbial or avoid it altogether.

3. Polish-English bilinguals produce less elaborate and shorter PATH prepositional phrases in L2 English than English monolinguals.

Following the remark of Daller et al. (2011) that conceptualization transfer is more likely to be revealed through statistical tendencies than category use, the study focuses on inter- and intra-group behaviour. Whenever relevant, attention is also given to individual preferences, as they tend to be overlooked by statistical tests.

5.1.3. Participants

The individuals who provided narratives for this research were Polish-English bilinguals who were residents of the United Kingdom and the Republic of Ireland. Additionally, the sample included students of English Philology at the University of Silesia, Poland. The characteristics of both groups are summarized in Section 4.2.2. Because it was difficult to find English monolinguals with a comparable level of education and with no or limited knowledge of an L2, the process of collecting narratives for the monolingual dataset extended beyond the researcher's study trips to London and Dublin and lasted over two years. During that time, 8 monolinguals completed the task online, having agreed to follow the testing procedure carefully. Another 8 were tested by the researcher during their study visits to Poland. The remaining 14 subjects completed the assignment in either London or Dublin under the researcher's supervision. They were not paid for their contribution. The Polish

monolinguals were much easier to recruit and were students of Polish Philology (N = 12) and mathematics (N = 18) at the University of Silesia. They were tested in two separate sessions held at their respective departments. What follows is a brief description of their educational and linguistic background.

The English monolinguals (N = 30) were predominantly Irish nationals (N = 20). The group also included US citizens (N = 4), Englishmen (N = 3), Canadians (N = 2), and an Australian (N = 1). The majority of them had a university degree ranging from a BA (N = 10) and MA (N = 11), to a PhD (N = 1). Eight participants were secondary school students in their final year. As regards proficiency in a language other than the L1, 27 of them had some knowledge of another language that they learnt in a formal setting. The language was not used on a regular basis or studied to a level higher than lower intermediate, however. None of the subjects had spent an extended period of time in a foreign country.

The Polish monolinguals (N = 30) were Polish nationals and students of the University of Silesia. All of them admitted having limited knowledge of either English (N = 25) or German (N = 5). None of them had progressed beyond the lower-intermediate level or had a chance to use the language in its natural context.

5.1.4. Materials

The stimulus video was the Oscar-nominated 6.27-minute silent film *The Cathedral* by Tomasz Bagiński. The video contains numerous dynamic scenes of a human's GOAL-oriented motion, which makes it a perfect choice for the study. The opening scene is a shot of a traveller lingering outside an abandoned Gothic cathedral in the wilderness. He makes his way towards the building and enters, only to find himself in a nave of towering columns with live faces embedded in them. The faces smile wryly as he passes through the hall and walks towards the cathedral's end. Once there, he discovers the cathedral opens onto a precipice overlooking what seems to be the universe. He watches the planets as they move in front of him. When the sun rises, the sunlight penetrates the building, inflicting pain on the living faces. When the light reaches the man, it destroys him by making him disintegrate and turn into dust. His remains are then captured by stone branches that emerge from the floor and rise towards the sky, forming another column in the process. The traveller's head is embedded at the top of the column.

Permission to use the video for research purposes was obtained from Tomasz Bagiński and the production company Platige Image.

5.1.5. Procedure

The procedure for implementing the film-retelling task was piloted on ten second-year students of English Philology. The students were divided into two groups of five, each of which was tested in a separate session and in a different language. The piloting stage helped to work out the details of the testing protocol by highlighting the need for the participants to view the video before starting to write, in order to be able to describe it with sufficient precision.

The instructions for the task ran as follows: *Describe the film in detail so that someone who has not seen it could imagine it easily* 'Szczegółowo opisz przedstawione w filmie wydarzenia, tak aby osoba, która go nie widziała, mogła go sobie z łatwością wyobrazić'. It was stressed that the participants should retell the film in writing rather than write a review of it.

The English monolinguals and the immigrants were tested individually by the researcher. A few English monolinguals completed the task online. The Polish monolinguals and the students took part in group sessions supervised by the researcher. The maximum length of the testing session was 45 minutes. If the participants completed the assignment in less time they were dismissed. In the case of bilinguals, the film-retelling task was the last component of the session, following the completion of the friendship questionnaire (see Section 4.2.4), and where applicable, of the background questionnaire. Each participant was tested twice, once in each language. The minimum text length was 350 words. The sessions were between 5 and 14 days apart. To control for language mode effects, the language of the task was the same as that of the entire session. The language order of testing was randomized.

To ensure maximum precision of description and relative spontaneity of reporting, the participants first viewed the entire video. This gave them a sense of how the plot developed and was helpful in constructing the timeline. During the second showing, the subjects were allowed to commence writing as soon as the film started, and hence used it as a backup in case they forgot the plot. The first half of the video was shown first, and was followed by a 10-minute pause and the second half of the film. After completing the task, the participants were given a few minutes to skim the text and make minor revisions. Nobody was allowed to rewrite the story. Following the data collection stage, each narrative was typed into a computer and included in the project's database.

5.1.6. Analysis

The video was divided into 5 segments, each of which showed one of the successive stages of the character's progression through the cathedral. From a theoretical perspective, each stage represented a different type of directed motion, as indicated in Table 14.

Table 14. Types of directed motion in the stimulus video

Stage of video	Scene	Type of motion
Stage 1	Human character walks towards the cathedral	Directed motion towards a GOAL seen in the distance
Stage 2	Human character enters the cathedral	Moving inside a building
Stage 3	Human character walks through the building towards its end which is known to the viewer but is not immediately visible	Directed motion towards a GOAL that must be inferred
Stage 4	Human character reaches the end of the building	Reaching the GOAL
Stage 5	Human character is engulfed by branches and raised to the top of a new column	Vertical motion towards a GOAL that must be inferred

Each of the five motion events was then analysed in terms of the encoding of the following conceptual components of motion: directed motion, endpoint, PATH verb, PATH satellite (either a prepositional phrase or a prefix, or both), MANNER verb and MANNER adjunct. The analysis of the presence of these factors in a narrative sheds light on the encoding of motion events in written discourse, and constitutes a basis for cross-linguistic comparisons. Because nearly half of the references to vertical motion in Stage 5 conceptualize it as motion from a SOURCE rather than towards a GOAL, the stage was not considered in the analysis of endpoint encoding. Likewise, since Stages 2 and 4 present acts of reaching the GOAL, the only sequences considered in the analysis of endpoint encoding are Stages 1 and 3.

An additional analysis considered word frequency of the elicited verbs of motion. Word frequencies for English were obtained from www.lextutor.ca operated by Université du Québec á Montréal. The analysis of Polish frequencies was conducted based on the list compiled by PELCRA. Since the PELCRA list is not lemmatized, the words considered for analysis are from the first 5,000 word frequency range, whereas the frequencies for English are from the first 1,000 and 2,000 frequency ranges.

Finally, information on whether and to what extent conceptualization patterns are affected by bilinguals' circumstances was obtained from the questionnaire that was used in Study 1. It provided data on the following variables: the amount of L2 English use, the amount of L1 Polish use, proficiency score in L2 English, and either the length of stay in an L2 country or the intensity of L2 study in a formal environment.

Statistical analysis

The number of times each conceptual component of motion appeared in each stage in each narrative was counted and reported in numerical form. The data were then statistically analysed by means of the following tests:

1. The Shapiro-Wilk test was conducted to check for normality of data distribution.

2. Descriptive statistics were computed for each of the variables considered in the analysis.

3. Spearman's rank correlation coefficient was calculated to check for correlations between the following sets of variables: the number of PATH verbs, MANNER verbs, endpoints, PATH satellites and MANNER adjuncts on the one hand, and the amount of L2 English use, the amount of L1 Polish use, proficiency score in L2 English, the length of stay in an L2 country or L2 study in a formal environment, on the other.

4. The Kruskal-Wallis test was run to assess the relation between the scores for motion components, i.e. PATH verbs, MANNER verbs, etc., in the monolingual, immigrant and student samples. If the result was significant, post-hoc Mann-Whitney U tests were performed to find out which groups were different. To counteract the problem of multiple comparisons, the Bonferroni correction was implemented.

5. The Wilcoxon matched pairs test was performed for intra-group comparisons, i.e. to compare a bilingual group's scores in each of the two languages.

6. The Mann-Whitney U test was run to analyse scores obtained by independent samples, i.e. the monolinguals.

All calculations were made using STATISTICA 10 software. The alpha level was set at 0.05 or less.

5.1.7. Results

The data for the selection stage of conceptualization show little evidence of cross-linguistic interaction, and consequently demonstrate considerable language specificity. For this reason, the results for each language are presented separately, starting with the monolingual English narratives and following up with the Polish data.

English monolinguals

Generally, the findings for the English monolinguals do not confirm Slobin's (1996) claims that English, being a satellite-framed language, conceptually prioritizes MANNER over PATH information. Despite the availability of an extensive MANNER lexicon, in a spontaneous written task the narrators use predominantly PATH verbs (N = 83), with the majority appearing in the first 1,000 word list (see Table 15). MANNER verbs (N = 44) are far less common, while MANNER adjuncts in the form of adverbs, e.g. *slowly*, are very rare (N = 10). PATH satellites in the form of a prepositional phrase appear 75 times. In some cases, they are composed of two independent phrases, i.e. *walks across the dunes to a strange cathedral-like structure*, or of a particle and a prepositional phrase, e.g. *wanders around through the statues and debris*.

Contrary to the predictions of the von Stutterheim framework, which posits that English does not show a tendency to encode endpoints on account of being an

aspect language, most monolingual subjects mentioned the GOAL of motion when referring to Stage 1 of the video. It shows directed motion across dry land towards a GOAL, i.e. the cathedral that is clearly visible and is reached after about a minute of the video's viewing time. Although the exact proximity of the character to the cathedral is not shown in a consistent fashion, the video makes it clear that there is a considerable distance to cover and focuses on aspects of the terrain. Nevertheless, the GOAL remains the most prominent feature of the scenery, and as such is reflected in the elicited encoding patterns. Of the 16 references to motion in Stage 1, 13 (81%) involve bounded events with an endpoint, as shown below (Example 16).

(16)
[…] *makes his way to the structure.*
[…] *moves towards it.*
[…] *walks slowly towards the cathedral.*
[…] *pushes on in the direction of the cathedral.*

Stage 3 lasts 1.12 minutes and depicts motion towards a GOAL that is known but is not immediately obvious. Only 1 (5%) out of 22 references to motion during this stage of the video includes an endpoint, i.e. *the moving man walks to the edge of* […] *a precipice*. The others present the event as unbounded and elaborate on aspects of the cathedral's nave. This is illustrated by Example 17:

(17)
[…] *walks past the pillars.*
[…] *passes through the cathedral.*
[…] *wanders around the floor in the vast interior of the cathedral.*
[…] *walks through its main hall.*

The discrepancy in encoding patterns between Stage 1 and Stage 3 demonstrates that perceptual prominence of endpoints, as well as their function in a narrative may override typological characteristics. Also worth noting is the fact that the decision to encode endpoints might have been determined by the offline character of the task, which provided the participants with prior knowledge of the segment's content. Commenting on their research into route sketch drawing, Habel and Tappe (1999) show that offline verbalizations differ from the online ones in the type and amount of detail they convey. This in turn suggests that the tendency (not) to encode endpoints may not be as pervasive as some of the studies conducted within the framework suggest.

Quite surprising from a typological perspective is the question of why the English narratives elicited in this study do not take advantage of the existent wealth of MANNER vocabulary, but instead rely on the most common PATH verbs, thus upgrading their conceptual prominence. MANNER information, as indicated by the combined totals of MANNER verbs and adjuncts (N = 54), is given much less

prominence. It cannot be ruled out that this imbalance results from the fact that the FIGURE is human and, accordingly, invokes a bias for PATH-only verbs (Pourcel 2009). The counter-argument is that the bias has not been observed in the Polish retellings (see *Polish monolinguals*), where MANNER verbs are dominant, and that the PATH verbs elicited by the narratives are in the most frequent vocabulary band and were probably natural vocabulary choices for the monolinguals. The conclusion that emerges is that estimates of the conceptual weight of linguistic structures should be based on actual usage in a variety of contexts rather than on mere availability, and that predictions based on typological trends alone stand a good chance of being misguided.

Immigrants: English

Like the English monolinguals, the immigrants used mainly PATH verbs (N = 79) from the first 1,000 word list. An exception is *approach* (N = 8), which is less frequent and does not occur in the monolingual stories. The use of MANNER verbs (N = 43) does not differ from that of the monolinguals, either. MANNER adjuncts, i.e. *confidently* (N = 1) and *slowly* (N = 2), are used minimally. PATH satellites in the form of prepositional phrases are common (N = 67) and are formed from single phrases, i.e. *walks towards the cathedral.* Overall, the satellites have a less complex structure than those in the monolingual dataset. In fact, the immigrants used only one prepositional phrase that was composed of two independent segments, e.g. *on the muddy road towards the cathedral.* Combinations of particles and prepositional phrases are scarce, too, and can be found mainly in the descriptions of vertical motion from a SOURCE, i.e. *shoot up out of his chest.* As regards the encoding of endpoints, the data obtained for Stages 1 and 3 follow monolingual encoding patterns. More specifically, 14 (67%) out of 21 references to motion contain an endpoint in Stage 1, while only 2 (6%) out of 34 motion events in Stage 3 do so. Typical lexicalization patterns for both stages are displayed below (Examples 18 and 19).

(18) Stage 1:
[…] *slowly walks towards the building.*
[…] *approaches the gate.*
[…] *walks towards the edifice.*

(19) Stage 3:
[…] *walks through the cathedral.*
[…] *walks along the aisle.*
[…] *goes along the building.*

Although the English narratives do not abound in MANNER vocabulary, the use of English moderately reinforces the use of MANNER verbs in the stories (rho = 0.4, p = 0.02). This correlation does not come as a surprise, given the fact that 3 out of 4 of the MANNER verbs used by the immigrants are in the most frequent word band. For a complete list of motion verbs in the English narratives see Table 15.

Table 15. PATH and MANNER verbs as used by the three sample groups (the words in bold type signify items beyond the first 2,000 word band)

PATH and MANNER verbs (N)											
Monolinguals: PATH		Monolinguals: MANNER		Immigrants: PATH		Immigrants: MANNER		Students: PATH		Students: MANNER	
enter	(22)	walk	(31)	enter	(16)	walk	(36)	go	(23)	walk	(13)
grow	(13)	shoot	(6)	reach	(12)	shoot	(4)	enter	(22)	step	(5)
reach	(13)	**wander**	(3)	grow	(10)	spring	(2)	reach	(13)	**wander**	(3)
move	(9)	spring	(1)	come	(9)	**stroll**	(1)	grow	(12)	spring	(2)
come	(6)	weave	(1)	go	(8)			come	(10)	stroll	(1)
pass	(5)	**climb**	(1)	**approach**	(8)			move	(8)		
go	(4)	push	(1)	pass	(7)			pass	(7)		
make one's way	(4)			move	(4)			travel	(4)		
arrive	(2)			get	(2)			**approach**	(4)		
proceed	(1)			**proceed**	(1)			cross	(3)		
draw near	(1)			rise	(1)			**arise**	(1)		
get	(1)			make one's way	(1)			leave	(1)		
progress	(1)							proceed	(1)		
rise	(1)							**ascend**	(1)		
								head	(1)		
Total	83		44		79		43		111		24

Students: English

The students diverge both from the English monolinguals and from the immigrants in terms of the number of PATH and MANNER verbs used in the retellings. As regards the PATH verbs, they apply them noticeably more often than the other two groups (N = 111), making *go* (N = 23) the main conveyor of directed motion information. This all-purpose verb replaces *walk* (N = 13) which, like all MANNER verbs (N = 24), was given less prominence in the students' narratives. The fact that the students downgrade MANNER in the construal of motion events is also reflected by the scarcity of MANNER adjuncts (N = 12). Here, the students use adverbs such as *slowly* (N = 7), *quickly* (N = 3), *uncertainly* (N = 1) and *fast* (N = 1). With respect to the satellites, the students use prepositional phrases (N = 84) and particles, e.g. *move on*, and do not differ from the other groups in terms of endpoint encoding in Stages 1 (N = 14, 67%) and 3 (N = 0). A few of the sample's lexicalization patterns are laid out in Examples 20 and 21.

(20) Stage 1
[…] *starts to walk towards a huge building.*
[…] *is approaching the old cathedral.*
[…] *goes towards a building.*

(21) Stage 3
[…] *goes through the cathedral.*
[…] *is walking slowly between the columns.*
[…] *walks along the hall.*

The unique nature of the students' conceptualization patterns has been confirmed by the Kruskall-Wallis test performed on the scores for PATH and MANNER expressions in the three groups. A comparison of the ranks for PATH verbs (39.53, 37.40 and 59.56 for the monolinguals, immigrants and students, respectively) proved to be significant ($H(2, N = 90) = 14.07$, $p = 0.0009$). Post hoc Mann-Whitney U tests with the Bonferroni correction ($\alpha = 0.016$) revealed differences between the monolinguals and the students ($U = 255$, $Z = -2.87$, $p = 0.003$) and between the students and the immigrants ($U = 223$, $Z = -3.34$, $p = 0.0008$). Similar results were obtained for MANNER verbs (ranks: 52.45, 50.65 and 33.40 for the monolinguals, immigrants and students, respectively, $H(2, N = 90) = 10.86$, $p = 0.004$), with the students diverging from the monolinguals ($U = 252.5$, $Z = 2.91$, $p = 0.014$, Bonferroni correction) and from the immigrants ($U = 284.5$, $Z = 2.43$, $p = 0.003$, Bonferroni correction). No differences between the sample groups were found for the encoding of endpoints, nor for the number of PATH satellites and MANNER adjuncts.

Polish monolinguals

Although the Polish MANNER lexicon is much smaller than its English counterpart, the monolinguals used predominantly MANNER verbs (N = 77) in their retellings of the video's motion sequences. Only 5 of the verbs, i.e. *idzie* 'walks', *wchodzi* 'walks in', *dochodzi* 'reaches', *przekracza* and *przechodzi* 'crosses' are in the 5,000 word frequency band. PATH verbs are definitely less common (N = 31) and comprise items from outside the 5,000 word band. The verb type data for the Polish retellings are displayed in Table 16. In addition to the MANNER verbs, the monolinguals convey MANNER information in a MANNER adverbial (N = 26) taking the form of an adverb (N = 20), e.g. *wolno* 'slowly', an instrumental noun phrase (N = 5), e.g. *niepewnym krokiem* 'with an uncertain step', or a present participle (N = 1), e. g. *podpierając się laską* 'leaning on a walking stick'.

In Polish, in line with Talmyan interpretations, PATH is encoded in the verb by means of a prefix (N = 85). Of the 29 motion verb types used in the retellings, only 7 are unprefixed, i.e. *rusza*, *mija*, *idzie*, *pną się*, *wędruje kroczy*, and *stąpa*, and constitute 21% (N = 23) of the motion verbs in the dataset. Ablative and adlative prefixes tend to connote a prepositional phrase, i.e. *z-mierza ku katedrze* 'heads for the cathedral', while perlative prefixes connote a noun phrase without a preposition, as in ***prze**-mierza katedrę* 'walks through the cathedral'. Ablative prefixes *pod-*, *do-*, and *z-* delimit the motion trajectory by connoting an endpoint. For the most frequent prefixes and prepositions in each of the examined motion sequences see Table 17.

Consistent with the predictions of von Stutterheim's framework, Polish does not show a tendency to encode endpoints to a greater extent than English does. Of the 12 directed motion events identified in the retellings of Stage 1, 11 (92%) are bounded and include an endpoint. The numbers are reversed for Stage 3, where only 3 endpoints are encoded (N = 3, 10%). This is almost identical to the English monolinguals' score for the two stages. In Stage 1, the endpoint is also mentioned in cases when the verb is unprefixed, although the unprefixed verbs in the retellings of the other stages rarely connote endpoints. Examples 22 and 23 show some of the typical lexicalization patterns for Stages 1 and 3.

(22) Stage 1
[…] *zbliża się do katedry* 'approaches the cathedral'
[…] *idzie w stronę katedry* 'walks in the direction of the cathedral'
[…] *zmierza ku katedrze* 'heads for the cathedral'

(23) Stage 3
[…] *powolnym krokiem przemierza katedrę* 'slowly moves through the cathedral'
[…] *idzie powoli do przodu* 'slowly walks forward'
[…] *wędruje przez katedrę* 'wanders through the cathedral'

Judging by the number of MANNER verbs in the Polish and English narratives, Polish seems to place more emphasis on MANNER information. However, considering that PATH is encoded morphologically and semantically in the verb and in the prepositional phrase, it is clearly dominant. This is because prefixed MANNER verbs, which constitute the majority of motion verbs in the elicited dataset, convey both MANNER and PATH information, and because directional prepositional phrases abound in the narratives. The MANNER information that is provided by adverbials of MANNER (N = 26) is optional and infrequent. Still, it is three times more common in Polish than in English (N = 10).

These cross-linguistic disparities are reflected by the results of the Mann-Whitney U test. It revealed a significant difference between the number of MANNER verbs in the Polish and English monolingual retellings (U = 165.5, p = 0.000), and between MANNER adjuncts (U = 266, p = 0.006) and PATH verbs (U = 102, p = 0.000) in the two languages. No statistically significant differences were found for endpoint encoding (U = 402.5, p = 0.48).

Immigrants: Polish

The immigrants' choice of motion verbs does not systematically diverge from that of the monolingual Poles. Accordingly, MANNER verbs (N = 79) constitute the majority of the elicited motion lexicon and exceed by a substantial margin the number of PATH verbs (N = 46). The verb frequency data are similar to monolingual norms, too. In fact, the same 5 verbs from the first 5,000 word list appear in the immigrant narratives. Of the less numerous PATH vocabulary, only *rosną* 'grow' appears in that word band. MANNER adjuncts are less frequent (N = 18) and comprise adverbs (N = 15) and noun phrases (N = 3), such as *zdecydowanym krokiem* 'with a determined step'.

In line with typological characteristics, the main means for encoding PATH information are the prefix and prepositional phrase. As regards the former, the immigrants use a similar number of prefixed verbs (N = 89) to the monolinguals but diverge from them by using more unprefixed verbs (N = 36, 29%), i.e. *idzie* (N = 14), *kroczy* (N = 3), *kieruje się* (N = 4), *rusza* (N = 3), and so on (see Table 16). Prepositional phrases are more frequent (N = 103) and are formed from a single phrase in the majority of cases. There are, however, 5 instances of two-segment phrases, e.g. *stąpa po glebie w stronę budowli* 'steps on the soil towards the building' that do not occur in the monolingual dataset. Finally, no significant contrasts were observed for the encoding of endpoints, with 17 (89%) and 3 (9%) instances of bounded events in Stages 1 and 3, respectively. Typical encoding patterns are illustrated in Examples 24 and 25:

(24) Stage 1
[…] *kieruje się w kierunku budynku* 'heads towards the building'
[…] *zbliża się do budowli* 'approaches the edifice'
[…] *kroczy w stronę budowli* 'walks in the direction of the edifice'

(25) Stage 3
[…] *idzie wzdłuż korytarza* 'walks along the hall'
[…] *powoli idzie przez katedrę* 'slowly walks through the cathedral'
[…] *powoli przemieszcza się wzdłuż nawy* 'slowly moves along the nave'

Worth noting is the fact that in the area of conceptual content selection, the immigrants retain language-specific encoding patterns in both their languages. This is evidenced by the results of the Wilcoxon matched pairs test, which shows the application of MANNER verbs ($Z = 3.74$, $p = 0.000$), MANNER adjuncts ($Z = 2.70$, $p = 0.006$), PATH verbs ($Z = 2.97$, $p = 0.002$), and prepositional phrases ($Z = 3.13$, $p = 0.001$) to be significantly different in each language. The result for prepositional phrases confirms that in English the immigrants use significantly fewer prepositional phrases to encode PATH information than in Polish. This, however, does not make their behaviour entirely monolingual-like since a post hoc Mann-Whitney U test, following a Kruskal-Wallis test performed on prepositional phrase scores for the three groups,[2] with alpha at 0.016 (Bonferroni correction), revealed a near significant difference between the immigrants and the monolinguals with respect to the use of PATH prepositional phrases ($U = 290$, $p = 0.017$). This is the only aspect of MOTION where the conceptualization patterns exhibited by the immigrants diverge from those of the Polish monolinguals.

Continuing in this vein, a practical example of how the immigrants' prepositional phrases diverge from those of the Polish monolinguals is the use of *wzdłuż* (N = 2) to describe progression through the cathedral in Stage 3. While not exactly incorrect by Polish standards, the preposition does not occur in the monolingual dataset. Its equivalent *along* (N = 2) is used by the English monolinguals, indicating that the few instances of the preposition in the immigrant stories may be examples of backward L2 transfer into the L1. A slightly higher incidence of *wzdłuż* (N = 3) has been observed in the students' L1 narratives.

[2] Ranks: Polish monolinguals 32.1, immigrants 49.16, students 55.23, $H(2, N = 90) = 13.5$, $p = 0.012$)

Table 16. PATH and MANNER verbs as used by the three sample groups (the words in bold type signify items in the 5,000 word band)

PATH and MANNER verbs (N)											
Monolinguals: PATH		Monolinguals: MANNER		Immigrants: PATH		Immigrants: MANNER		Students: PATH		Students: MANNER	
przemierza	(5)	**wchodzi**	(21)	dociera	(8)	**wchodzi**	(21)	dociera	(11)	**wchodzi**	(21)
dociera	(4)	**dochodzi**	(13)	wyrastają	(8)	**idzie**	(14)	przemierza	(7)	**idzie**	(12)
wyrastają	(4)	**idzie**	(7)	zbliża się	(6)	**dochodzi**	(13)	zbliża się	(6)	**dochodzi**	(12)
rusza	(3)	**przekracza**	(5)	kieruje się	(4)	**przechodzi**	(6)	wyrastają	(5)	pną się	(10)
zmierza	(3)	pną się	(5)	przemieszcza się	(4)	kroczy	(3)	mija	(5)	wystrzeliwują	(5)
zbliża się	(3)	wystrzeliwują	(4)	przemierza	(3)	posuwa się	(3)	rosną	(4)	wędruje	(5)
podąża	(3)	**przechodzi**	(4)	rusza	(3)	pną się	(2)	podąża	(4)	**przechodzi**	(3)
wznoszą się	(2)	kroczy	(3)	zmierza	(3)	wystrzeliwują	(2)	zmierza	(3)	kroczy	(3)
porusza się	(1)	stąpa	(3)	**rosną**	(3)	podchodzi	(2)	postępuje	(2)	posuwa się	(3)
mija	(1)	podchodzi	(2)	mija	(2)	wirują	(2)	dostaje się	(2)	podchodzi	(3)
wydobywają się	(1)	przechadza się	(2)	udaje się	(1)	wychodzą	(2)	kieruje się	(1)	wkracza	(2)
rozrastają się	(1)	posuwa się	(2)	porusza się	(1)	**przekracza**	(1)	wznoszą się	(1)	wychodzą	(1)
		wytryskują	(2)			stąpa	(1)	rusza	(1)	przestępuje	(1)
		wędruje	(1)			przechadza się	(1)	udaje się	(1)	wzbijają	(1)
		przesuwa	(1)			wytryskują	(1)	porusza się	(1)	przechadza się	(1)
		wypływają	(1)			wędruje	(1)			robi krok	(1)
		wydzierają się	(1)			wypływają	(1)			strzelają	(1)
						wydzierają się	(1)				
						wkracza	(1)				
						wiją	(1)				
Total	**31**		**77**		**46**		**79**		**54**		**85**

Table 17. The most frequent exponents of PATH information in the Polish and English narratives

Stage	Monolinguals			Immigrants			Students		
	English	Polish: prefixes and prepositions		English	Polish: prefixes and prepositions		English	Polish: prefixes and prepositions	
1	towards	pod-, z-	w (kierunku), do	towards	z-, pod-,	w (kierunku), do	towards, to	po-, pod-, do-	do, w (kierunku),
2	into	w-	do	into	w-, prze-	do	into, in	w-	do
3	through, along	prze-	w (głąb), przez, po	along, through	Prze-, po-, w-	wzdłuż, przez, do, na	through, along, forward	prze-, po-	przez, wzdłuż, po
4	to	do-	do	to	do-, z-	do	to	do-	do, na
5	from	wy-	w (górę), z	out, from	wy-,	z, ku, w (górę)	out, from	wy-, w-	w, do, z

Table 18. Quantitative data for the selection stage: statistical significance for within-language (•) and cross-linguistic comparisons (*); significant at 0.05

Group	Directed motion	Endpoint (total)	Path verb	Path PP	Manner verb	Manner adjunct	Prefix
Polish monolinguals	108	58	*31	81	*77	*26	85
Polish immigrants	125	66	*46	•*103	*79	*18	89
Polish students	•136	70	•*54	•*110	*85	20	96
English monolinguals	120	64	*83	75	*44	*10	
English immigrants	111	57	*79	*67	*43	*3	
English students	127	56	•*111	*84	•*24	12	

Students: Polish

A unique feature of the student narratives is a high number of references to directed motion. This coincides with a frequent use of Path verbs (N = 54) and prepositional phrases (N = 110) which exceed those used by the monolinguals. The number of prefixed verbs remains similar (N = 96) in the three samples, while unprefixed verbs (N = 43, 32%) reach a peak level in the student group. The encoding of endpoints does not diverge from the other samples, and is the highest in Stage 1 (N = 20, 80%) and the lowest in Stage 3 (N = 1, 3%). Unprefixed verbs in Stage 1, i.e. *idzie*, *wędruje*, and *kroczy* all connote endpoints, as shown in Example 26. In Stage 3, the opposite is the case (Example 27).

(26) Stage 1
[…] *kroczy w jej kierunku* 'walks in its direction'
[…] *wędruje w kierunku katedry* 'wanders towards the cathedral'
[…] *idzie w jej kierunku* 'walks in its direction'

(27) Stage 3
[…] *idzie powoli korytarzem* 'slowly walks down the hall'
[…] *kroczy wzdłuż katedry* 'walks along the cathedral'
[…] *wędruje dalej* 'keeps wandering, wanders farther'

In line with the characteristics exhibited by the Polish monolinguals, Manner verbs (N = 85) are the most common verb type in the dataset. Most of them are relatively rare and fall outside the 5,000 word frequency range. The exceptions include *wchodzi*, *idzie*, *dochodzi* and *przechodzi*, which appear higher in the PELCRA frequency list. Manner adjuncts, perhaps on account of supplying optional Manner information, are less common (N = 20) than in the monolingual group and take the form of adverbs (N = 11), noun phrases (N = 6) and present participles (N = 3).

To conclude, the students approximate language-specific patterns when selecting content for verbalization. The Wilcoxon matched pairs test shows significant differences between the students' L1 Polish and L2 English encoding patterns in areas such as the use of PATH verbs ($Z = 4.18$, $p = 0.000$), prepositional phrases ($Z = 2.76$, $p = 0.007$), and MANNER verbs ($Z = 4.34$, $p = 0.000$). The results for the number of directed motion events and endpoints encoded in the narratives approach significance ($p = 0.06$ and $p = 0.056$, respectively). Again, this does not mean that the students demonstrate monolingual-like encoding behaviour since the Kruskal-Wallis test performed on the scores for MOTION components in the three groups revealed significant differences for PATH prepositional phrases (ranks: Polish monolinguals 32.1, immigrants 49.16, students 55.23, $H(2, N = 90) = 13.5$, $p = 0.012$) and directed MOTION events (ranks: Polish monolinguals 34.73, immigrants 46.58, students 55.18, $H(2, N = 90) = 9.8$, $p = 0.007$). The result for PATH verbs bordered on significance ($p = 0.049$), with a post hoc Mann-Whitney U test showing no significant differences between the groups concerned. Since alpha was set at 0.0167 (Bonferroni correction), the only groups that approached the significance level were the Polish monolinguals and the students ($p = 0.02$). As far as the directed MOTION events and prepositional phrases are concerned, the post hoc Mann-Whitney U test showed the students to diverge significantly from the Polish monolinguals in both areas ($U = 208$, $p = 0.000$ and $U = 246$, $p = 0.002$ for the prepositional phrases and MOTION scores, respectively).

None of the background variables considered in the analysis, i.e. the amount of L2 study and L1/L2 use and proficiency in the L2, proved to significantly affect the students' encoding preferences, as revealed by the Spearman's rank correlation coefficient. The only correlation bordering on significance was that between the use of PATH verbs in L1 Polish and L2 English proficiency ($\rho = 0.35$, $p = 0.051$). Given that the English narratives give more emphasis to PATH information, this result is evidence that the level of proficiency in the L2 moderately influences aspects of content selection in the L1.

5.1.8. Discussion

This section presents an overview of the study's results in the form of answers to the research questions raised at the beginning of this chapter (see Section 5.1.2). The answers (henceforth A1, A2, etc.) are numbered sequentially and correspond to specific research questions in the order of their appearance in the chapter.

5.1.8.1. Selection: A cross-linguistic dimension

A1: In general, the results cast doubt on the accuracy of Slobin's (1996) claims that typologically determined parameters, such as the availability of MANNER verbs, encourage widespread use of this dimension in communications referring to MOTION. In fact, this study indicates that typological characteristics do not necessarily surface in language use. For instance, the monolingual data for English are characterized by an overwhelming predominance of PATH verbs, most of which are in the most frequent vocabulary band. Thus, despite being readily available, MANNER verbs do not constitute obvious lexicalization choices for speakers of English. Moreover, the narratives do not contain numerous MANNER adjuncts that could compensate for the scarcity of MANNER information encoded in the verbs, leading to the conclusion that in the context of semi-spontaneous film retellings, English prioritizes the PATH of motion.

The results for Polish are more in tune with the Slobinian line of thought: MANNER verbs constitute the majority of motion verbs and MANNER adjuncts are almost three times more common than in English. PATH is omnipresent, being encoded in the verb as a prefix and in the satellite prepositional phrase. Unprefixed verbs are rare. All this makes PATH the dominant component of MOTION in Polish, although its prominence is obscured by the much higher frequency of MANNER verbs.

A2: Concerning endpoints, this study does not yield direct evidence in support of von Stutterheim's contention that Polish, being an aspect language, does not encode endpoints in a situation when the GOAL has not been reached but remains visible. In fact, the results suggest that the encoding of endpoints may be subject to constraints such as prior knowledge of content, the perceptual prominence of the GOAL and the character of the task (online vs. offline). Viewed from a cross-linguistic perspective, this study demonstrates that Polish and English encode endpoints under similar circumstances.

A3: Not all bilinguals exhibit the same behaviour as monolinguals. In English, statistically significant differences have been found between the monolinguals and the students in the use of PATH and MANNER verbs. No differences have been reported for the encoding of endpoints, PATH prepositional phrases and MANNER adjuncts. Considering the centrality of verbs to conceptualization processes, the conclusion must be that the students fall short of the monolingual norm in the most central domains of MOTION. The preference for PATH verbs is probably rooted in developmental acquisition processes, and is reinforced by the greater conceptual prominence of PATH and a high frequency of use of PATH verbs. The immigrants do not diverge from the monolinguals in any of the areas described above. In Polish, significant differences have been found for the use of PATH prepositional phrases and the number of references to MOTION. The students diverge from the Polish monolinguals on both counts. Their result for PATH verbs approaches

significance. The immigrants do not meet monolingual standards only in the domain of prepositional phrases, which they use more frequently. This is the only area of Polish where directed motion events exhibit vulnerability to cross-linguistic transfer.

A4: As can be expected, at more advanced levels of proficiency content selection is implemented according to language-specific principles in each of the bilinguals' languages. Accordingly, the immigrants' lexical preferences follow language-specific encoding patterns in areas such as the number of prepositional phrases, MANNER verbs, MANNER adjuncts, and PATH verbs. The students' scores show increasing language-specificity in the use of PATH and MANNER verbs, and prepositional phrases. The emerging picture of selection seggests that it is an autonomous process, with the most proficient L2 users demonstrating limited cross-linguistic conceptualization transfer (Pavlenko 1999, 2005, 2009). It also lends support to Bylund's (2011) finding that linguistic effects are far-reaching and can be observed at the macroplanning stage of conceptualization.

5.1.8.2. The setting of L2 learning and use

A5: As a group, the immigrants are more successful in achieving and maintaining high levels of proficiency in both their languages than the students. The fact that systematic differences from L1 and L2 monolingual norms have been found in the student narratives brings to the fore the role of contextual factors at the most advanced stages of L2 learning. The obtained datasets do not follow the expected patterns: the immigrants demonstrate monolingual-like behaviour in both languages, despite having limited contact with their L1, while the students diverge from the monolingual norm on a number of counts in both Polish and English, despite learning the latter in an L1 setting. Similar trends were found in Study 1 for naming and categorization. Because the study does not look into the language history and mode(s) of language use of its participants, it cannot offer informed insights into the causes of these between-group differences. However, it may suggest a few possible explanations for future research to consider. Thus, the main reason for these divergent tendencies may be the type of experiential input on which the two groups base their mental representations and the subsequent L1 and L2 mappings. These representations are formed in qualitatively different contexts in cases of naturalistic/immersion learning. Foreign language education takes place in a homogeneous cultural and linguistic setting. A recent study by Short-Morgan et al. (2012) discovered through the use of EEG recordings that naturalistic and classroom learning call on different processing mechanisms. As a result, learners trained through immersion rely on native-like brain processing procedures leading to monolingual-like content selection choices. Finally, as pointed out by Daller et al. (2011), conceptualization in bilingual immigrant populations may be determined

by the dynamics of changing language dominance. In their study of Turkish-German bilinguals, the authors found that the individuals residing in Germany followed the German conceptualization blueprint in both their languages, while the returnees to Turkey showed a preference for the Turkish frame when speaking Turkish and German. At the time of the research, most of the returnees had stayed in Turkey for over 7 years. In the authors' opinion, such systematic trends result from the overpowering influence of the linguistic environment. Clearly, however, the Polish immigrants did not succumb to environmental pressure. Since the length of residence in an L2 context has been found to be insignificant in inducing cross-linguistic effects in the realm of conceptualization, the conclusion is that, in addition to language dominance, future studies should consider motivational factors, such as the desire to maintain a high level of proficiency in the L1. Informal conversations with the participants revealed that, for a sizeable proportion of the group, immigration was temporary and that they wanted to return to Poland one day.

5.1.8.3. The influence of individual background variables

A6: As regards the factors that may be deemed as predictors in the selection of content for expression, statistical analysis singled out two variables; that is, the amount of L2 English use and proficiency in L2 English. The former reinforces the use of MANNER verbs in the immigrants' L2 English, while the latter is linked to the application of PATH verbs in the students' L1 Polish. The fact that English use correlates with the selection of those components of MOTION that are verbalized less often, as is the case with MANNER verbs in English, indicates that to become habitual, the use of MANNER verbs requires more intense practice. On the other hand, the fact that L2 English proficiency predicts the use of PATH verbs in L1 Polish, where such verbs are generally less common, can be conceived of as evidence for the interdependence of bilingual lexicons and L2 influence on the L1.

As in Bylund and Jarvis (2011), the length of residence in an L2 environment does not correlate with any of the investigated motion components, despite the fact that the participants' length of stay in an L2 environment did not exceed 3.3 years on average. By contrast, Bylund and Jarvis included in their research individuals with at least 12 years' residence in an L2 country. At first glance, this lack of a correlation shows the variable to be dissociated from conceptualization. On closer inspection, however, and in the light of findings in favour of immersion, it becomes apparent that the variable may be too broad to capture the dynamics of L2 acquisition. The length of residence in an L2 environment is taken to represent constant contact with the language in a variety of contexts and functions, which in itself is a questionable assumption. Future studies may find it useful to define the construct more carefully by focusing on the amount, type, mode, and contexts of L2 use.

5.1.8.4. Implications for conceptualization processes

A7: A finding that emerges from the limited conceptual data that the study offers is that the selection stage, regarded by Levelt (1989) as instrumental in the what-to-say phase of conceptualization, i.e. macroplanning, is subject to considerable language specificity.

Finally, the obtained data confirm the predictions made at the outset of the investigation. These predictions prove correct in the case of students whose usage of MANNER and PATH verbs differs significantly from that of the English monolinguals. Although English prioritizes PATH verbs in general, the students use significantly more of them, reducing the number of MANNER verbs by nearly 50% in comparison with the English monolinguals. MANNER adverbials, too, are used minimally by both the immigrants and the students. This result accentuates the conceptual prominence of PATH which, in accordance with Talmy's (2003) position, is evidently acquired and conceptualized before MANNER. The third prediction about prepositional phrases in L2 English holds true for both the immigrants and the students who produced shorter and simpler phrases than the English controls.

5.1.9. Conclusion

The assumption underlying Study 2a has been that lexicalization patterns constitute a window on the content selection procedures that precede the production of linguistic utterances. These procedures determine which aspects of the perceived/conceived experience are verbalized. As has been demonstrated by previous research, informed insight into the mechanics of selection can be derived from a juxtaposition of non-linguistic, preferably visual input, and its linguistic and non-linguistic rendition. The latter may take the form of gestural communication (Gullberg 2011; Papafragou et al. 2006) and/or eye tracking in conditions preceding verbalization and coinciding with it (Papafragou et al. 2008). Although neither medium offers direct access to conceptualization processes, to date, both of them have confirmed that the content selection patterns that are recruited for language production are delimited by, but not confined to, linguistic categories. As regards linguistic expression, this study has made clear that it is guided by conventionalized encoding preferences rather than mere availability of lexical categories.

To conclude, despite the lack of non-linguistic tests, the regularities of some of the patterns observed in the collected dataset, viewed against related research into the non-verbal domain, allow the study leeway to conclude that the linguistic patterns it probes are informative about processing at the non-linguistic level. Such an approach is not immune to error, however. As the results of this study have revealed, linguistic and non-linguistic processes need to be investigated in

relation to task characteristics and the obtained dataset. Reliance on broadly defined typological trends and disregard of task and stimulus formats may conceal vital contrasts and result in accounts of non-existent relationships.

5.2. Study 2b

The second part of the study, i.e. Study 2b, examines patterns of segmentation and temporal structuring in written narratives by Polish and English monolinguals and Polish-English bilinguals. The narratives are the same as those used in Study 2a. The subject of the analysis is a description of a 2-minute episode depicting the absorption of the main character into the body of the cathedral. The plot runs as follows: first, we see the man standing on the edge of the precipice at the cathedral's end. When the sun comes out the sunlight penetrates the interior of the cathedral and reaches the man who is then captured by plants growing out of the earth beneath his feet. The plants rip his body apart and transform him into a column of the cathedral. The starting point of the examined sequence is the moment the light reaches the man; the sequence ends when the man's face is shown at the top of one of the cathedral's columns.

5.2.1. Segmentation

Segmentation involves sorting conceptual content into information units prior to verbalization. If the perceived episode is an unfolding situation, its conceptual representation will be segmented into a number of propositions, each of which will be representative of either an event/occurrence (see Riemer 2010) or a state. The von Stutterheim paradigm (von Stutterheim and Nüse 2003) focuses solely on the conceptualization of events and examines the following three levels of representation:

a. The external world: a situation stands for what happens in the external world.

b. The mental representation of an external situation: an event is a conceptual representation of the situation.

c. The linguistic representation of 1 and 2, grammatically expressed by a dynamic predicate and an argument (Bylund 2011a). This is because "in its most generic conception an event is something that happens" (Bylund 2011a: 108).

In preparing for speech production, speakers need to make a decision about the amount of information they intend to convey. For example, they may present a holistic (macro) view of the situation, as in *The postman delivered the letter*, or break it down into a number of (micro)events, such as *The postman arrived*, *he rang the doorbell*, *took the letter out of his bag and handed it to me*. The amount of propositional detail conveyed at the level of linguistic description is often referred

to as the level of granularity. Viewed from the perspective of speech-planning processes, granularity is an index of segmentation.

The results of over a decade of research indicate that systematic patterns of granularity go hand in hand with aspectual distinctions and the tendency to encode endpoints. More specifically, speakers of languages such as German and Swedish, which lack grammaticalized (imperfective/progressive) aspect and thus mention endpoints, encode fewer events than speakers of Arabic, English, Spanish, and Russian, where grammaticalized aspect is an obligatory grammatical category. Moreover, speakers of aspect languages are more likely to mention details of event substance that tend to be passed over as of no importance in non-aspect languages. Bylund (2011a), among others, found these differences to be statistically significant for Swedish and Spanish (cf. Schmiedtová et al. 2011). He also examined segmentation patterns in the languages of Spanish-Swedish bilinguals and detected in-between behaviour in L1 Spanish and L2 Swedish. In other words, the bilingual subjects differed from monolinguals in both their languages, yet showed a similar level of granularity, i.e. convergence, in each language. There was, however, a lot of individual variability in the dataset, with some bilinguals exhibiting closer adherence to L1 patterns than others. Finally, Bylund found that segmentation does not seem sensitive to factors such as the age of onset of bilingualism, length of residence in an L2 environment, or amount of L1 use.

5.2.2. Structuring

Structuring is a process of selecting a perspective for an event prior to verbalization. Because the narratives elicited for the purposes of this study have the uniform format of a retelling in the third person singular, this study's focus is on cross-linguistic differences in temporal structuring within the present tense time span. Its main linguistic determinants are tense and aspect, which remain closely intertwined yet independent of each other. Tense locates the event on a timeline, i.e. an abstract sequence of temporal intervals. In English narratives, these intervals are linked to an external point of view, relative to the deictic *now* coinciding with the time of utterance (cf. Evans 2012).

Aspect in turn offers a complete or partial view of the situation, as well as specifying the situation's type and temporal structure. Generally, sentences in the present tense refer to unbounded situations and are therefore imperfective. Stative situations with a perfective reading remain stative (Smith 1991). In English, the Present Progressive tense denotes events unfolding at the time of speech. The progressive aspect indicates that the situation holds not only for the moment of utterance but also for a succession of moments that make up the situation at large. This led Reichenbach (1947) to observe that the tense covers an indeterminate stretch of time that encompasses the present moment(s) and hence is extended

in time. This feature of the progressive is capitalized on in cases when it is used to create a temporal background for another situation (Comrie 1985; Smith 1991). The progressive also denotes temporary situations of limited duration, as in *She is living in London now*.

The other present tense in English, the Simple Present, can be used to denote situations that co-occur with the present moment. Such a use is marked and can be found in running commentaries and film retellings (Comrie 1985; Klein 2009) where it presents a series of events as they happen. In this tense, the verb is morphologically unmarked for grammatical aspect and offers a perfective reading. The events are thus presented as complete and punctual (Comrie 1985; Riemer 2010). What is more, they form a succession of points in time to the effect that changing their order automatically alters the chronological structure of the event. Unlike English, Polish lacks the present progressive and, consequently, the present tense is used to denote all activities in the present time span. They are imperfective. In a present-time narrative or commentary, temporal background tends to be created by a clause in the past tense (Bogdan and Sullivan 2009). Polish, like all Slavic languages, encodes the perfective and imperfective grammatically on the verb independently of tense marking.

Following Klein (1994), von Stutterheim attributes to the progressive the tendency to decompose events into constituent phases, i.e. phasal decomposition, and to present them as they happen without specifying their initial or terminative phase, i.e. the endpoint or result. Leaving the events unbounded allows speakers to temporally anchor them in discourse pragmatics, i.e. the external deictic *now*, rather than in the preceding event. This results in a scarcity of explicit temporal marking in the texts produced by speakers of aspect languages (Bylund 2011a, 2011b; von Stutterheim and Nüse 2003). The progressive specifies the time of assertion structurally, as opposed to Simple Present forms which require the context to specify their temporal meaning, as in *The duck waddles into the barn* (Schmiedtová et al. 2011: 75). Moreover, simple verb forms are neutral with regard to grammatical aspect and therefore do not convey meanings that are in opposition to the Present Progressive (Schmiedtová and Flecken 2008). They are also assumed to have much less cognitive weight because they do not represent grammatically encoded concepts. The Aktionsart they convey has no direct connection to the timeline (Klein 1994). The framework does not consider the usage of Simple Present forms in running commentaries and film retellings.

Considering the differences in structuring preferences between aspect and non-aspect languages (see Section 2.3), research into bilingual conceptualization patterns tends to examine temporal structuring in terms of the number of explicit temporal markers. For instance, Bylund (2011b), who studied event construal in Spanish, an aspect language, and Swedish, an non-aspect language, counted the number of anaphoric sequential temporal adverbials, i.e. *then* or *next*, in both languages to determine the dominant structuring pattern for each language.

Given that the research conducted to date has not focused on structuring and segmentation preferences in aspectually similar languages, such as Polish and English, this study offers a unique chance to fill that gap in the existent body of evidence.

5.2.3. Research objectives

The present study views segmentation and temporal structuring as stages of conceptualization. Segmentation involves categorizing non-linguistic knowledge in terms of the propositional content expressed by the language in use, while structuring encompasses choosing a viewing perspective in line with the language's aspectual constraints. Since both processes constitute the pre-verbal phase of speech, the analysis of linguistic surface structures provides information about the organizing criteria that conceptualization needs to follow. The study seeks answers to the following questions:

1. What are the similarities and differences in event segmentation, as demonstrated in written film retellings by Polish and English monolinguals?
2. How do Polish-English bilinguals segment events in their two languages?
3. What patterns of temporal structuring are adopted for event description in Polish and English?
4. How do Polish-English bilinguals temporally structure events in both their languages?
5. Does the setting of language use influence the choice of temporal perspective and event resolution levels?
6. Which individual background variables significantly affect segmentation and temporal structuring in bilinguals?
7. What are the implications of the obtained segmentation and structuring patterns for pre-speech conceptualization processes?

5.2.4. Materials and procedure

The materials and procedure were the same as those in Study 2a. It must be stressed that the instructions for the task did not contain questions such as *what is happening*?, which was the stimulus phrase in the von Stutterheim research. This was done in an attempt to avoid inducing the participants to use specific grammatical constructions in response to the question (Papafragou and Selimis 2010).

5.2.5. Analysis

This section presents the criteria used to divide the running text of the episode description into segmentation units. These were then analysed according to whether they instantiated dynamic events or states. The section also contains a description of the statistical tests used for the quantitative analysis of the data.

5.2.5.1. Segmentation units

Based on von Stutterheim and Nüse (2003), the text was segmented into clauses corresponding to propositions. Not all syntactic clauses express propositions. For instance, "*It is the dog that broke the glass* contains two formal clauses, each with a finite verb, but refers to only one situation and counts as one proposition" (Noyau et al. 2005: 3). The analysis also considered present participle constructions because they constitute minimal predicative structures whose time reference is simultaneous with the time reference of the main verb (Comrie 1985; Schmiedtová 2004). Consequently, they express temporal information in a verb-like manner and develop the storyline, as in *He makes his way towards the building, walking across dry ground*, which was classified as two events: *He makes his way towards the building* and *walking across dry ground*. Likewise, *Pędy pną się w górę, tworząc kolejną kolumnę* 'The branches grow upwards creating another column' was also classified as two events. Furthermore, only self-contained and temporally uniform events were considered. This in practical terms means that events that were syntactically presented as being incorporated into another event, i.e. *He's trying to find a way to stop the machine* (Bylund 2011b: 65) were disregarded on the grounds that they were embedded in the time of this other event. In the example above only *He's trying to* counted as an event. Events introduced with a verb of perception and presented as coinciding with it, e.g. *We can see the pilgrim falling on the ground*, counted as one event because an act of perception does not advance the plot in any way. Finally, events that did not fit into the narrative's temporal schema were excluded from the analysis. For instance, in *The man becomes embedded into this column which blossomed out of his stick and his own body*, the relative clause *which blossomed out of his stick and his own body* refers to an interval that does not belong to the main storyline, and consequently does not contribute to the flow of (micro-)events within it.

The number of propositional segments relating to events was computed per person and used in the granularity count.

5.2.5.2. The event/state distinction

Because the main objective of the von Stutterheim team was to investigate conceptualization patterns in event construal, the framework focuses exclusively on dynamic situations and the viewing perspectives that the language in use imposes on them. This automatically excludes stative situations from analysis (von Stutterheim and Nüse 2003). Nevertheless, such situations have been found in the narratives produced by the participants of this study, which makes it necessary to present the criteria used in distinguishing events from states. They are the following:

a. Events are dynamic, i.e. involve change, agency or activity, and comprise either a sequence of successive stages or an instantaneous event. At the linguistic level, they are represented by dynamic predicates that typically have a full non-stative verb as a head (Smith 1991). In a narrative, non-stative clauses advance the storyline (Bogdan and Sullivan 2009).

b. Stative predicates often contain stative verbs and nouns and/or adjectives in the predicative position. The stative verbs typically denote possession, properties, location, beliefs, and mental states, as well as habits and dispositions. A linking copula may also be present where applicable, e.g. s*he is intelligent.* Generally, states do not involve change, dynamism or agency; they do not take time and simply exist without any internal phases or boundaries (Dahl 1985). States persist over time without change. Consequently, in English they do not take the progressive and use the Simple Present to refer to the present moment, as in *I know Greek* rather than **I'm knowing Greek*. Also, they cannot occur in the frame *What she did next was* _____, e.g. *know Greek* (Riemer 2010: 320). Stative sentences with a perfective viewpoint denote a state and are unbounded (Smith 1991).

Polish also distinguishes between stative and dynamic situations, of which the former are the province of verbs denoting physical and emotional states (*spać* 'sleep'; *bać się* 'to be scared'), as well as properties (*ważyć* 'weigh'). Stative verbs do not have a perfective form in Polish (Laskowski 1998). Langacker (1987) regards stative verbs that do not take the progressive as imperfective, and verbs that occur in progressive constructions as perfective.

c. As regards the Simple Present/Past constructions in the passive voice, opinion is divided on whether they are stative or dynamic (actional). Smith (1991: 44) argues that sentences such *The gate was closed by the guards* focus a change of state and "allow the inference that the resultant state continues." Tobin (1993) contends that BE-passives, as in *be caught*, are more likely to be stative, while GET-passives, i.e. *get caught*, are actional (Tobin 1993) in English. The approach adopted in this study is that the character of the construction is determined by the constituent verb/participle. Consequently, passive constructions involving a stative verb/participle are also regarded as states. By analogy, Polish passive constructions containing the linking verbs *być* 'to be' and *zostać* 'become' are treated as non-stative if the constituent participle is derived from a dynamic verb.

5.2.5.3. Temporal structuring

The criterion for determining the temporal perspective of the retellings is the use of tense and aspect in each dynamic predicate. According to Bardovi-Harlig (1998: 475), dynamic predicates constitute the foreground, i.e. the skeletal structure of the narrative, by virtue of containing "clauses that move time forward." The number of explicit temporal markers will also be computed to obtain data on the temporal expressions used by each participant sample and on how they affect the unfolding storyline. Following Bylund (2011a), temporal markers, which he calls *connectors*, encompass adverbials of time and subordinate connectives. The latter include *sequential connectors* presenting events as occurring in a sequence, e.g. *then*, and *simultaneous connectors*, such as *as* and *while*, conveying the idea of events occurring at the same time as other events (cf. Schmiedtová 2004). Other relevant linguistic forms expressing simultaneity are present participles of non-stative verbs and their Polish equivalents. Two kinds of English participial constructions have received the most attention: those used in place of co-ordinate clauses and specifying the actions of the main verb in an adverb-like manner, e.g. *She reads a newspaper and sips wine*/*She reads a newspaper*, *sipping wine*, and those replacing defining relative clauses and performing the function of an adjective, e.g. *The man who is serving lunch works for me*/*The man serving lunch works for me*. Their Polish equivalents include adverbial present participles 'imiesłów przysłówkowy współczesny', e.g. *Ucieka w popłochu, potykając się o korzeń*, and adjectival active participles 'imiesłów przymiotnikowy czynny', e.g. *Potyka się o korzenie wyrastające z mchu*. Both Polish and English allow pre-nominal and post-nominal participial modifiers, e. g. *wirujące ku niebu pnącza*/*pnącza wirujące ku niebu* '*swirling towards the sky vines/vines swirling towards the sky'. However, pre-nominal modifiers containing adverbials are impossible in English (Lewandowska-Tomaszczyk 2008). Moreover, Lewandowska-Tomaszczyk (2008) explains that the position of the participle in the noun phrase determines the phrase's aspectual character. In Polish, prenominal participial modifiers convey a progressive reading and are coextensive with the time of speaking. Postnominal participial modifiers tend to have a generic and identifying function, and as such indicate a permanent or characteristic feature. In English, this pattern is reversed. As regards simultaneity, information about actions concurrent with those of the main verb is conveyed by adjectival and adverbial present participle clauses in postmodifying position (Swan 2005). Because postmodifying adjectival participle clauses and adverbial participial constructions outnumber the prenominal adjectival participles in the Polish and English datasets, this analysis of temporal structuring centers on participial postmodification and adverbial participle clauses, as used in a narrative.

Connectives such as *suddenly* 'nagle' and *w pewnej chwili* 'at a certain moment' do not influence the timeline and have hence been excluded from the analysis. Since the distinction between simultaneous and sequential connectors is relevant to

temporal structuring, it will be used throughout the section to explain structuring choices for the process in question.

Two variables have been created for the purposes of statistical analysis: the total explicit markers score consisting of the combined totals of simultaneous and sequential connectors, and the total simultaneity score comprising the combined totals of present (adverbial and adjectival) participles and simultaneous connectors. To standardize the score for the use of the Simple Present in the descriptions of the episode, the first seven segments were considered. This was the lowest average number of segments per sample in the three participant groups.

5.2.5.4. Statistical analysis

The following statistical procedures were performed on the segmentation and temporal structuring data:

a. The Shapiro-Wilk test was conducted to check for normality of data distribution.

b. Descriptive statistics were computed for each of the variables considered in the analysis.

c. The Pearson product-moment correlation coefficient was calculated to check for correlations between the following sets of variables: the number of segments, present participles and the total number of temporal connectors on the one hand, and the amount of L2 English use, the amount of L1 Polish use, proficiency score in L2 English, the length of stay in an L2 country or L2 study in a formal environment, on the other. If any of the variables did not follow a normal distribution, Spearman's rank correlation coefficient was calculated.

d. The Kruskal-Wallis test was run to assess the relation between the segmentation and structuring scores in the monolingual, immigrant and student samples. If the result was significant, post hoc Mann-Whitney U tests were performed to find out which groups were different. To counteract the problem of multiple comparisons, the Bonferroni correction was implemented.

e. The Wilcoxon matched pairs test was performed for intra-group comparisons, i.e. to compare a bilingual group's scores in each of the two languages.

All calculations were made using STATISTICA 10 software. The alpha level was set at 0.05 or less.

5.2.6. Results

The results will be presented in the following order: first, the English and Polish monolingual narratives will be discussed to set up a frame of reference for the bilingual data. These will be evaluated with respect to each of the bilinguals'

languages and the setting of L2 use. When relevant, the results of statistical analyses will be displayed to shed light on the significance of the observed relationships.

English monolinguals

The predominant tense of the English monolingual retellings is the Simple Present tense. It appears in 204 clauses of the collected narratives (N = 204, 88%). The Present Continuous is used sparingly (N = 3, 7%), and exclusively in relative clauses, to create a temporal background for the event communicated by the main clause, e.g. *his right arm, which is holding the stick, is torn off*. Two subjects retold the story using the Simple Past. The Present Perfect is applied three times (N = 3, 7%). Passive predicates are rare, too (N = 10). Only one participant used the verb of perception *see* to present the event as witnessed and co-occurring with perception. Although the use of the Simple Present for running commentaries and retellings is considered to be marked, these statistics show that it is not uncommon.

As regards segmentation, the overall number of dynamic events verbalized by the English monolinguals is over 200 (N = 221). Ten predicates contain stative verbs and have been classified as referring to states (N = 10). The highest number of segments in a passage is 14 (N = 14), while the shortest passage expresses just one proposition in a single segment (N = 1). The average level of granularity is 7 segments per person (mean = 7.12, SD = 3.3).

The temporal structure of the examined passages is uniform throughout the dataset: each passage is composed of a number of uninterrupted events which are bounded and perfective (Smith 1991), and devoid of an internal temporal span. The perfective character of the predicates gives the episode a sense of linear chronology because the timeline appears to be formed from a series of temporal points arranged in the order of mention and anchored to an external viewing centre. Such a deictic viewing frame is independent of tense and grammatical aspect. The two stories in the Simple Past have the same viewing frame as those in the Simple Present, regardless of the absence of the progressive. Moreover, as is typical of a deictic viewing frame, the succession of events is rarely made explicit. Consequently, temporal marking is scarce (N = 38, 17%) and tends to be implemented by means of subordinate connectives and adverbials of time.[3] Some adverbials, i.e. *then* (N = 8), *a moment, etc. later* (N = 2), *first* (N = 1) and *soon* (N = 2), convey a sequential reading and are thus termed *sequential connectors*. Even though their semantics appear to advance the plot, they are temporally independent of the previous clause or time interval, which may or may not be bounded, as demonstrated in Example 28. The deictic viewing pattern of *now event X, now event Y* is prevalent.

[3] The main exponent of temporal information is of course tense. Since it interacts with a number of linguistic devices in the process of structuring the timeline, the emphasis is on explicit temporal expressions which, by virtue of their explicitness, influence the make-up of clauses and need to be considered in the speech-planning phase.

(28) *As he turns into a tree*
branches quickly begin to form
and then he fades into the forest,
leaving his original state.

Simultaneity, i.e. the occurrence of two or more events in the same time interval, is in turn expressed by simultaneous connectors, such as *as* (N = 12), *while* (N = 1), and *when* (N = 5), as well as present participles replacing co-ordinate clauses (N = 22). It is the only type of participial construction in the dataset that could be interpreted as expressing simultaneity. Because the participial construction follows the main clause, it affects the timeline by denoting a parallel event that is profiled as ongoing and unbounded due to the progressive reading. As far as the simultaneous connectors are concerned, the meaning of *when* is ambiguous because it may denote either simultaneity or a succession of two events, the second of which starts the moment the first one ends. Considering its role in advancing the storyline in the narratives, *when* has been classified as expressing simultaneity. Together with *as* and present participles, it creates multi-layer sequences of parallel events. Examples 29 and 30 illustrate this principle more closely. They also show that a sense of continuity may be created by duplicating the main verb, as in *The branches grow and grow*, or *The vines continue to grow and grow.*

(29) […] *the man covers his face*
as the light hits him,
causing him to fall to the ground,
and as shoots spring from the ground,
they spring through the man
and cause him to become another living dead figure in the gothic church on this barren landscape.

(30) *The man shields his eyes,*
and when the light turns onto him,
his hand […] *crumbles like the gravel before.*
He falls backwards to the ground,
and suddenly his body explodes.
Branches break out of his chest […]
The branches grow and grow,
engulfing the man
and raising him up.
He is captured into a column,
and becomes a statue.

The present perfect, although used only three times in the entire dataset, may be used to indicate completion of a situation, as in *The man has become part of the planet now.*

A notion given prominence under this approach is that of phasal decomposition, i.e. the selection of a stage of an event for expression, as opposed to presenting the event in its entirety (cf. Langacker 1987). Schmiedtová et al. (2011) attribute phasal decomposition to the progressive since it zooms in on the phase of the event that is ongoing at the time of speaking, thus overlooking the event's endpoints. Indeed, such an understanding of phasality is inherent in the progressive and becomes grammaticized through its use (von Stutterheim and Carroll 2006). Schmiedtová et al. (2011), however, also link it to a greater granularity of description which, as evidenced by the present study, is not confined to the progressive.

Polish monolinguals

The dominant tense of the Polish narratives is the present tense (N = 222, 92%). Two retellings are in the past tense (N = 2). Four events are presented as witnessed and have been encoded by means of one of the following verbs of perception *widzimy*, *obserwujemy*, *dostrzegamy* 'we see, observe, notice'. Passive voice is used in nine clauses (N = 9). Temporal background for the events communicated in the main clause is created by the verb in a defining relative clause (N = 3), e.g. *Laska, którą postać trzymała w dłoni, rozsypuje się* 'the stick which the character was holding in his hand crumbles'. As shown in the example, the verb is in the past tense.

The number of events distinguished in the sample is over 200 (N = 223). There are also 18 stative predicates (N = 18). The granularity index ranges from 1 to 13 segments per passage; the average is 7 segments per person (mean = 7.43, SD = 3.55).

In the stimulus video, the chronology of the episode is determined by the order of presentation of particular situations. The retellings portray this as a series of uninterrupted events which are presented as uncompleted and in progress. The adopted aspectual perspective is imperfective, while the viewing frame is definitely deictic. Although the events are profiled as ongoing, in a narrative passage their duration is (contextually) terminated by the emergence of the next clause/event that advances the storyline. This shows that in acts of interpretation the psychological validity of salient grammatical categories may be overshadowed by pragmatic factors (cf. Bardovi-Harlig 1998). Because the adopted viewing frame is deictic, explicit temporal marking is redundant and is therefore scarce, as shown in Example 31:

(31) *Postać stojąca przed katedrą zostaje porażona światłem*,
'The character standing in front of the cathedral gets dazzled with light,'
gwałtownie mruży oczy.
'and squints abruptly.'
Laska, ***którą postać trzymała w dłoni****, rozsypuje się.*

'The stick **which he was holding in his hands** shatters.'
Rozsypuje się także trzymająca ją ręka.
'The hand holding it shatters, too.'
Z oderwaną ręką upada,
'With his hand ripped off he falls down,'
wydaje się, że czuje ból.
'it seems he is feeling pain.'
Z jej tułowia zaczynają wyrastać gałęzie, pędy, z jakich zbudowana jest katedra.
'From his trunk start growing branches and twigs, of which the cathedral is made.'
Szybko pną się w górę.
'They twine upwards quickly.'
Ciało postaci przypomina wijącego się węża.
'The protagnist's body resembles a slithering snake.'
Postać, oplątana wyrosłymi z jej wnętrza pętami, staje się częścią katedry.
'The protagonist, bound by ties grown from his inner parts, becomes part of the cathedral.'

The relative clause in bold type is a past imperfective used to create a temporal frame for the main clause.

Overall, the Polish monolinguals used 18 temporal connectors in all. Ten of them express simultaneity (N = 10) and eight are sequential (N = 8). The sequential connectors include the following: *po chwili* 'after a moment' (N = 3), *zaraz*/*chwilę potem*/*później* 'a moment later' (N = 3), and *po czym*, *następnie* 'next' (N = 2). Expressions such as *nagle* 'suddenly' and *w pewnym momencie* 'at a certain moment' have not been considered in the analysis because they do not advance the storyline. Simultaneity in turn is communicated by means of connectives and adverbials (N = 10), as well as present participles (N = 25). The former include *gdy* and *kiedy* 'when' (N = 6), *w tym momencie* 'at that moment' (N = 3) and *w chwili gdy* 'the moment when'. The latter encompass adverbial (N = 15) and postnominal adjectival (N = 10) participles, with the adjectival participles modifying the object in the majority of cases (N = 8). Together with the connectors, they create a multi-level plot depicting two or more events taking place simultaneously. This is illustrated by Example 32. The expressions in bold communicate parallel events. The deictic viewing pattern of *now event X, now event Y* is apparent.

(32) *Nagle z ziemi wyrastają pnącza*
'Suddenly vines grow out of the earth'
i tym razem ***atakują*** *zdecydowanie bohatera,*
'and this time attack the protagonist strongly,'
łapiąc *jego magicznego kostura oraz rękę.*
'seizing his magic wand and his hand.'

***Starając** się walczyć,*
'Making an effort to fight,'
***próbuje** wyrwać się z pułapki, co prowadzi do urwania jego ręki na wysokości łokcia,*
'he tries to break free from the trap, which leads to his arm being ripped off at the level of the elbow,'
*która to wraz z kosturem momentalnie **rozpada się** w pył.*
'which, together with the wand, crumbles to dust instantly.'
***W tym momencie** bohater **pada** na kolana* […].
'At this moment the protagonist falls to his knees.'
*Pnącza **atakują** go zawzięcie,*
'The vines attack him fiercely,'
***łapiąc** go*
'catching him'
*i **wyrywając** mu się z klatki piersiowej.*
'and breaking out of his chest.'
Powstaje kolejny fragment katedry, nowa kolumna,
'A new part of the cathedral is created, a new column,'
którą staje się teraz nasz bohater.
'which is what our protagonist becomes now.'

This example shows that Polish monolinguals are happy to use present adverbial participles before the main clause to create a sense of simultaneous action.

An independent samples T-test did not reveal significant differences between the Polish and English monolinguals in the granularity count ($t(58) = 0.26$, $p = 0.79$). As regards explicit temporal marking, the Mann-Whitney U test showed a significant difference between the groups ($U = 296$, $p = 0.02$). No significant differences, however, were found for the expression of simultaneity ($U = 374$, $p = 0.26$). Thus, although the languages adopt the same deictic viewing frame and exhibit similar resolution levels, they diverge in specific aspects of temporal structuring. That is, English uses more sequential connectors, most likely because of the adopted perfective viewpoint.

The immigrants: English narratives

In comparison to the English monolinguals, the immigrants use a greater variety of tenses in their English narratives. Although most opt for the Simple Present tense (N = 191, 83%), the internal setup of the storylines bears evidence of a lack of differentiation between the punctual and perfective Simple Present and the dynamic and temporally extended Present Progressive. Consequently, in some stories (N = 10), clauses in the Simple Present are intermingled with those in the Present Progressive. Overall, however, the progressive is infrequent (N = 24) and has been found in 11% of segments only. The progressive has also been used twice

(N = 2) to create a temporal background for the events communicated by the main clause. Of the remaining tenses used by the immigrants, the Present Perfect figures in 4 stories (N = 4) and the Simple Past in 5 (N = 5). Passive constructions are more frequent (N = 26), as compared to the monolingual retellings (N = 10), and include uses of get + past participle (N = 8), which does not occur in the monolingual sample. Two events are conceived of as witnessed and contain a verb of perception in the main clause, e.g. *we can see*, *we can hear*.

In general, the immigrant narratives demonstrate a level of granularity that is similar to the monolingual counts (N = 213). They are, however, more likely to contain stative predicates (N = 18). The number of segments distinguished in a passage ranges from 1 to 13. The average length is 7 segments per person (mean = 7.1, SD = 2.80).

The majority of passages (N = 20) preserve the temporal structure of the English monolingual retellings where the timeline is, for the most part, a series of uninterrupted punctual events that are perfective. The Present Progressive has been used exclusively by participants with a lower level of proficiency in English, i.e. the B2 level. It gives the impression of simultaneity and is uncharacteristic of retellings. The Simple Past, when used in the last clause of the passage, indicates the episode's completion (see Example 33).

(33) *The light is exploding*
and his body is suddenly exploding as well.
His body starts to grow in different shape-full light,
his body starts to be a building
[*and*] *is changing rapidly.*
He is in pain,
he is surprised maybe disappointed, maybe just dead…
He became a new cathedral himself.

What is specific to the immigrant group is the scarcity of explicit temporal marking, well below the English monolingual level. The immigrants used only 22 temporal connectives in total. These included sequencing temporal adverbials, i.e. *then* (N = 9) and *after a few minutes* (N = 1), and simultaneous connectives, such as *as* (N = 7), *when* (N = 3), *while* (N = 1), and *still* (N = 1). Consequently, they produced more stories with no explicit temporal marking (see Example 34). This was made possible by a deictic viewing frame.

(34) *The man falls to the ground,*
his right arm falls off his body
and from his heart spring out tree branches
that join with the branches
that appear from the ground.

He is trapped.
He forms another, the most recent, part/wall of the cathedral.

The narratives are also devoid of the multiple levels of simultaneity that the monolinguals created with *as* and present participles. As a result, most of them follow a linear timeline whose chronology is determined by the order of mention.

A noteworthy difference from the English monolinguals concerns the functions of present participles in developing the storyline. Here, the English monolinguals use participles solely in place of co-ordinate clauses following the main clause. The participles qualify the actions of the agent and are thus coreferential with the sentence's subject. Their Polish counterpart is the present adverbial participle. Such participles have been found in the immigrant narratives (N = 8); however, they are on a par with participles used in place of defining relative clauses which predominantly modify the object of the sentence (N = 10, see Example 35: the words in bold are present participles and the modified sentential objects). Their Polish equivalent is the active adjectival participle. The monolingual Poles used both types of participial clauses, although the adverbial ones were more common (N = 10 and N = 15, respectively).

(35) *As the light hits him,*
he falls onto his knees
and is immediately captured by ***twigs and branches***
growing *out of the ground.*
His heart breaks into pieces,
which are transformed into vibrating ***plants***
rising *towards the sky*
and ***forming*** *an altar in the process.*

Example 36 demonstrates the type of difficulty that a Polish-English bilingual is likely to face when expressing simultaneity by means of participles: the adjectival participle *engulfing* defines *roots* and yet is used in the function of a coordinate clause. It is then followed by yet another participle preceded by a sequential connector *then*, which gives the expression a sequential rather than simultaneous reading.

(36) *The monk shields his eyes,*
as the overpowering sunbeams get closer.
His staff gets consumed by ***roots,***
engulfing *his right hand*
and ***then bursting*** *into dust.*
He is left without his arm
and collapses to his knees, curled into a fetal position.

All of a sudden he is thrust upward
and a complex network of roots shoots up out of his chest.

An English monolingual asked to comment on the example suggested changing the sentence to: *His staff is consumed by roots that engulf his right hand, and then burst into dust.* It is also possible that the confusion was caused by an inappropriate use of a comma.

In the light of the above, it should come as no surprise that the use of participles is moderately correlated with proficiency in the L2 ($\rho = 0.47$, $p = 0.009$). In fact, individuals with the highest proficiency used the most participles, while those at the B2 level (N = 8) used only one participial construction (see Table 19).

Table 19. Use of present participles in English by the immigrants and students

Immigrants $\rho = 0.47$, $p = 0.009$		Students $\rho = 0.3$, $p = 0.1$	
L2 proficiency	Participles	L2 proficiency	Participles
C2 (N = 12)	N = 11	C2 (N = 6)	N = 6
C1 (N = 10)	N = 6	C1 (N = 14)	N = 17
B2 (N = 8)	N = 1	B2 (N = 10)	N = 5

In conclusion, the immigrant English retellings showed granularity levels and a viewing perspective that were similar to those employed by the English monolinguals. Despite these parallel tendencies, there were marked differences in the area of temporal structuring, particularly with respect to simultaneity. The differences included the use of postmodifying present participles in the object noun phrase and a reduced number of temporal connectives. Because both have been observed in the monolingual Polish dataset, there are grounds for attributing them to cross-linguistic influence. The other contrasts, such as the application of the present progressive and the increased use of passive voice are clearly a sign of incomplete L2 acquisition.

The students: English narratives

The students' English narratives show a greater variety of tenses than the monolingual and immigrant samples. Even though the majority of segments are in the Simple Present tense (N = 223, 81%), a much higher number of clauses are in the Simple Past (N = 38, 15%). The Present Progressive (N = 14, 5%) is used minimally and in the main clauses only. None of the background segments (N = 6) apply the Present Progressive, the preferred tenses being the Simple Present (N = 2), Simple Past (N = 2) and the Past Progressive (N = 2). Four stories are in the Simple Past, which has also occasionally been used to conclude an episode (N = 3), along with the Present Perfect (N = 1). Overall, the Present Perfect appears in four clauses.

Passive constructions are relatively frequent (N = 25, 10%), with just one instance of the get + passive and three cases of Present Progressive passives. Five events are represented as witnessed.

In the student group, segmentation and granularity patterns are certainly the highest of the three populations (N = 255), with the length of passages ranging between 4 and 15 segments (mean = 8.5, SD = 2.55). Twenty predicates contain stative verbs and are therefore regarded as states. A contributing factor is the level of proficiency in L2 English. The Pearson's product-moment correlation found it to be positively correlated with the students' segmentation index ($r = 0.37$, $p = 0.04$). A Kruskal-Wallis test on the segmentation indices for the English monolingual, immigrant and student narratives did not produce significant results ($H(2, N = 90) = 3.73$, $p = 0.16$, with a mean rank of 41.73 for the monolinguals, 41.8 for the immigrants, and 52.97 for the students). The non-parametric test was conducted because the data for the student group did not meet the normal distribution requirement ($W = 0.91$, $p = 0.02$).

Although the Kruskall-Wallis test did not reveal any contrasts between the three groups in respect of the use of the simple present tense ($H(2, N = 90) = 2.77$, $p = 0.24$, ranks: 1 = 43.50, 2 = 41.26, 3 = 51.73), the temporal structure of the plot is far from uniform. The adopted viewing frame is for the most part deictic. However, the variety of aspectual and temporal distinctions applied within that frame deprives the storyline of linear chronology which, in the case of the monolingual stories, is created by a succession of perfective simple verb forms. This is illustrated by Examples 37 and 38.

(37) *The man is holding his rod*
and suddenly his hand is falling off.
He fall down on his knees
and the branch-like things are coming out of his chest.
They go up
and the man is becoming a part of the cathedral,
now he is creating it.

(38) *The man is standing in one place*
and suddenly his right hand is transformed into the branch.
It looks fragile
so eventually the man is disposed of his hand.
After that, he kneels on the ground as if he was in pain.
He stretches his body in different directions.
The branches start emerging out of his body.

The progressive in Example 37 denotes two simultaneous events interrupted by a third punctual event. In Example 38, by contrast, it creates a background for the

second event, i.e. the transformation of the hand into a branch. The application of *after that* links the event denoted by the clause to the completion of the previous event, thus disrupting the deictic viewing frame. Similar disruption is brought about by the application of present participles in the opening clauses of sentences, as is demonstrated in Example 39. Used in this manner, the participle creates an extended temporal background for the events communicated by the consecutive clauses and opens a new event frame inside the episode. This type of narration (N = 3, 10%) is uncharacteristic of English monolingual patterns where participles replacing coordinate clauses conclude event sequences as a rule of thumb.

(39) *The Cathedra fills up with the beams of light*
and reaches the man.
Then the 'roots' evolve his stick and his palm.
Trying to free himself,
he pulls his hand
which become cut out of his body.
The man falls down
and the bunch of roots emerge from his heart and his body.
The roots go up
and become the part of the construction of the cathedra,
completing it with one another pillar.

In total, the student dataset includes 28 participial constructions, of which 18 are adverbial and follow the main clause. Of the 10 adjectival participles found in the sample, 5 are used postnominally in the subject noun phrase, thus creating islands of parallel subevents within the event segments, as in: *His right hand* [*which is*] *holding the stick falls off* 'Jego prawa ręka trzymająca kij odpada'. Apart from the fact that such structuring patterns are literal calques from L1 Polish, they also create temporal frames that are not typical of English narratives. For this reason, the student passages follow an irregular timeline that does not have the chronology of English event descriptions.

Despite the conceptual and syntactic gravity of the observed patterns of temporal structuring in the three sample groups, the Kruskall-Wallis test produced a non-significant result for expressions of simultaneity in the episode ($H(2, N = 90) = 0.41$, $p = 0.81$, ranks: 1 = 46.20, 2 = 43.33, 3 = 46.97 for the English monolinguals, immigrants and students, respectively). Such a result does not come as a surprise considering the limited length of the episode and the brevity of the descriptions it inspired. Based on the calculations performed by STATISTICA 10, future studies in the area should be based on much larger samples of a minimal size of 428 cases, or alternatively, examine longer texts. No correlation has been found between the use of participles and proficiency in L2 English ($\rho = 0.3$, $p = 0.1$). The lack of a significant relationship is most likely the result of the make-up of the student sample where

over half of the participants were at the C1 level. The students at the B2 level (N = 10) used the fewest participles (see Table 19).

Brief mention should also be made of temporal connectors, of which sequential connectors are more common (N = 22). They include *then* (N = 7), *after some time/a while* (N = 7), *soon* (N = 2), *first* (N = 2), *next* (N = 2), *a moment later* (N = 1) and *a short instance after that* (N = 1). Only *then, soon* and *a moment later* figure in the English monolingual dataset. The simultaneous connectors (N = 11) include *when* (N = 8) and *while* (N = 3) and reflect monolingual preferences. The Kruskal-Wallis test found no statistically significant differences between the three groups for the use of temporal connectors ($H(2, N = 90) = 2.03$, $p = 0.36$, ranks: 49.36 for the monolinguals, 40.45 for the immigrants and 46.68 for the students). None of the groups concerned followed normal distribution. Worthy of note, though unrelated to temporal structuring, is the much higher use of passive constructions by the bilinguals than by both monolingual groups. The most likely explanation for this is that it reflects the bilinguals' perception of the structural properties of English.

To conclude, the picture emerging from the analysis of the English narratives is more complex and nuanced than the research conducted to date seems to suggest. First of all, the segmentation indexes for Polish and English are markedly similar. Consequently, neither the immigrants' nor the students' granularity counts diverge from those of the monolingual English controls. The most conspicuous cross-linguistic differences arise in the area of temporal structuring and have to do with the way the narrators construct the timeline. Like the English monolinguals, the immigrants use a deictic viewing frame and the perfective Simple Present tense to advance the storyline in a linear fashion. They differ in the number of explicit temporal markers, which they use minimally. They also differ in how they create simultaneity, with the monolinguals relying predominantly on simultaneous connectors and present participles used in place of coordinate clauses. The immigrants, by contrast, resort to the Present Progressive and postmodifying adjectival and adverbial participles. The adjectival participles modify the object in a manner typical of Polish narratives and could therefore be perceived as a carry-over from L1 Polish. The students in turn have obvious difficulty in constructing linear chronology, as is required in a retelling. Even though they use mainly the Simple Present, they intertwine their stories with segments in the Simple Past to a much greater extent than do the other two samples. They also use the Simple Present, Simple Past and Past Progressive tenses to set up a temporal background for the events in the foreground. Consequently, the linear chronology of the stories is disrupted. To alleviate the effects of such disruption, the students use a relatively high number of sequential connectors, such as *then*. These move the story forward, regardless of the tense and aspectual perspective it conveys. Also striking is the way the students express simultaneity, which is the result of two factors. First and foremost, they do not use the Present Progressive excessively, although they definitely resort to it more often than the English monolinguals. Moreover, they

transfer L1 Polish patterns into the L2 by availing themselves of adjectival participles in the construction of subject noun phrases. The second factor is the use of present participial constructions in a sentence-opening position, i.e. before the main clause. This disrupts the flow of events by introducing a new temporal frame, often in the middle of the episode. Finally, their narratives show a lower incidence of simultaneous connectors.

Such structuring difficulties show that switching from an L1 viewing frame imposed by the imperfective aspect to a seemingly identical frame constructed by the grammatically unmarked perfective is not simply a matter of transferring structuring conceptualization patterns from the L1 to the L2. Likewise, the transition from a grammatically marked aspect to an unmarked one, which in principle should be structurally simpler, is in fact far from simple. The evidence discussed thus far indicates that Poles have trouble understanding aspectual distinctions in English, and that these problems continue into the most advanced stages of L2 proficiency. They also manifest themselves differently in different contexts of L2 use.

On a linguistic front, it is pertinent to note that the availability of conspicuous aspectual marking for ongoingness does not always influence encoding preferences, as in specific contexts languages may rely on alternative, i.e. lexical, ways of encoding the concept. Finally, because a deictic viewing frame has been observed in narratives using the perfective and imperfective aspect, there is reason to believe that it is independent of the presence of aspectual verbal morphology encoding ongoingness. The information about the tense/aspect choices exercised by the participant populations is laid out in Table 20.

Table 20. Segmentation and structuring data for the examined passages

	English monolinguals	Immigrants: English	Students: English	Polish monolinguals	Immigrants: Polish	Students: Polish
1	2	3	4	5	6	7
Segmentation (no. of events)	221	213	255	223	229	281
Average number of segments	7	7	8.5	7	7.6	9.4
Stative predicates	10	18	20	18	16	17
Simple Present (no. of clauses)	204 (88%)	191 (83%)	223 (81%)	222 (92%)	223 (90%)	273 (91%)
Present Progressive/ imperfective (PL) (no. of clauses)	3	24	14	16	20	16
Simple Past/Past Perfective (PL) (no. of clauses)	22	14	38	16	20	16

Table 20 continued

1	2	3	4	5	6	7
Temporal background	Present Progressive	Present Progressive	Simple Past, Simple Present, Past Progressive, present adverbial participles	Past imperfective	Past imperfective	Present imperfective, Past imperfective
Passive voice	10	26	25	9	9	21
Witnessed events	1	2	5	4	2	1
Participles (total)	22	18	28	25	20	33
Adverbial participles	22	8	18	15	14	24
Adjectival participles	0	10	10	10	6	9
Adverbial participles: sentence-opening clauses	0	0	3	0	0	0
Temporal connectors (total)	38	22	33	18	24	36
Simultaneous connectors	21	12	11	10	13	14
Sequential connectors	17	10	22	8	11	22

The immigrants: Polish narratives

The main tense of the narratives is the present tense (N = 223, 90%). Two stories are in the past perfective (N = 20). The past tense has also been used to conclude an episode (N = 1) and to create a temporal background for other events (past imperfective, N = 2). Nine clauses are in the passive voice (N = 9). Two events are presented as witnessed (Example 40).

(40) *Światło dociera również do pielgrzyma.*
'The light also reaches the pilgrim.'
Widzimy maleńkie gałązki wyłaniające się z ziemi
'We can see tiny branches emerging from the ground'
i zaczynające oplatać laskę pielgrzyma.
'and beginning to twine around the pilgrim's stick.'
Nagle odpada mu ręka

'Suddenly his hand falls off'
i wraz z laską rozsypuje się w pył.
'and together with the stick crumbles into dust.'
Z wnętrza pielgrzyma wystrzeliwują jakby gałęzie
'A kind of branches shoot out from inside the pilgrim'
i dołączają do reszty konstrukcji.
'and join with the rest of the structure.'
Jego ciało zostaje uwięzione w konstrukcji katedry.
'His body becomes imprisoned in the structure of the cathedral.'

Overall, the immigrants show surprising uniformity of performance in both their languages. Consequently, in the areas under investigation, their Polish narratives share quite a few characteristics with the English ones. For instance, the granularity count is similar with 229 dynamic predicates in the entire sample (N = 229). The mean length of an episode is 7.6 segments. Sixteen clauses contain stative verbs (N = 16). The longest passage consists of 16 segments (n=16), the shortest one of just 4 segments (N = 4, SD = 2.53). The Wilcoxon matched pairs test confirms the accuracy of these observations with a non-significant result (Z = 0.73, p = 0.46, Mdns = 7 and 7.5 for the Polish and English counts, respectively). A related finding is that the use of English seems to reinforce segmentation patterns in L1 Polish. Pearson's Rank-order correlation test shows a moderate positive relationship between the amount of English use and granularity levels in Polish ($\rho = 0.45$, $p = 0.01$).

The temporal composition of the passages does not diverge from that in the English retellings, either. In the majority of excerpts, the timeline develops in a linear fashion with few connectors advancing it explicitly. Passages without explicit temporal marking are quite common and accentuate the prevalent deictic viewing frame (Example 41). The constituent events are imperfective. The past imperfective occurs in relative clauses denoting background events.

(41) *Światło rani również podróżnego,*
'The light also hurts the traveler,'
który zasłaniając twarz dłonią,
'who covering his face with his hand,'
upada
'collapses'
i zamienia się w proch.
'and changes into dust.'
Jego kończyny oplatają gałęzie,
'Branches twine around his limbs,'
serce rozrywa gotująca się krew,
'boiling blood ruptures his heart,'
która zamienia się w pnącza

'which changes into lianas'
wirujące ku górze.
'swirling upwards.'

The scarcity of temporal connectors and the subsequent simplicity of the timeline, which was also observed in the immigrants' English narratives, are hallmarks of the immigrant style. Simultaneity is created mainly with adverbial participles (N = 14). Adjectival participles are rare (N = 6), and postmodify the sentence's object. Equally rare are simultaneous connectors (N = 13) that include mainly *kiedy* and *gdy* 'when' (N = 4), *jednocześnie*, *w tej chwili*, and *w tym samym momencie* 'at the same time' (N = 3). Sequential connectors occur eleven times (N = 11). The most frequent ones are *następnie* 'next' (N = 3), *po chwili* 'after a moment' (N = 3) and *po paru chwilach* 'after a few moments' (N = 3). The Wilcoxon matched pairs test confirmed the lack of significant contrasts between the immigrants' Polish and English retellings in the area of explicit temporal sequencing (Z = 0.4, p = 0.68, Mdn = 1 and Mdn = 0.5 for Polish and English, respectively), and in expressing simultaneity (Z = 0.54, p = 0.58, Mdn = 0 and Mdn = 0.5 for Polish and English, respectively).

The students: Polish narratives

The students described the sequence using mainly the present tense (N = 273, 91%). Three stories (N = 3) are set in the past, hence 26 segments feature the past tense. The majority of past clauses express punctual and perfective events (N = 16) but there are also cases of past imperfective (N = 10), which is not restricted to temporal background clauses (N = 3). The temporal background is also created by the present imperfective (N = 3). Twenty one predicates are in the passive (N = 21). Only one event is represented as witnessed and contains a verb of perception in the main clause, i.e. *widać* 'it can be seen that'.

The granularity count is the highest of all the collected datasets (N = 281). Stative predicates occur in 17 segments. The number of segments per person varies between 1 and 15 (mean = 9.4, SD = 3.38). Despite the very high granularity index, the Wilcoxon matched pairs test did not reveal significant differences from the group's segmentation level in English (Z = 1.01, p = 0.31), with the medians for the English and Polish passages ranging between Mdn = 8.0 and Mdn = 9.5, respectively. Significant differences were found by the Kruskal-Wallis test performed on the segmentation scores for Polish in the monolingual, immigrant and student groups, with ranks of 41.57, 39.2 and 55.73, respectively (H(2) = 7.11, p = 0.028). Post hoc Mann-Whitney U tests, with alpha at 0.01 (Bonferroni correction) revealed a significant difference between the students and the immigrants (U = 281, p = 0.01). The difference between the monolinguals and the students bordered on significance (U = 316, p = 0.04).

However, the most conspicuous feature of the narratives is the use of temporal connectors to help construct the timeline. Placed at the beginning of a clause, sequential connectors emphatically move the plot forward. In some stories, they

occur in successive sentences and give the impression of an anaphoric shift, even though their use is not linked to the completion of the event denoted by the previous clause. This is demonstrated in Example 42.

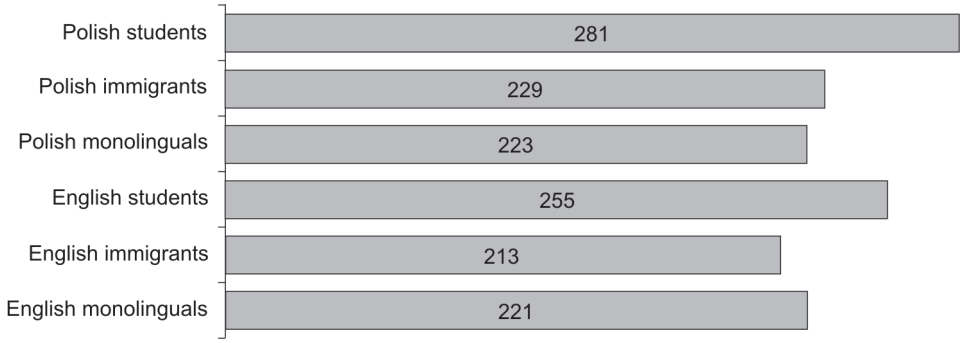

Figure 10. The number of events encoded

(42) *Bohater schyla się, aby dotknąć ziemi,*
'The protagonist bends down to touch the ground,'
coś na kształt korzeni zdaje się pojawiać przy jego dłoni.
'something in the shape of roots seems to appear beside his hand.'
***Następnie** kij, który mężczyzna trzyma w dłoni zostaje opleciony konarami drzewa,*
'Next, the stick that the man is holding in his hand becomes entwined by tree branches,'
przez co staje się dłuższy.
'and becomes longer as a result.'
Bohater w niewyjaśnionych okolicznościach traci rękę,
'The protagonist loses his arm in mysterious circumstances,'
która zostaje jakby porażona prądem.
'which (the arm) becomes sort of electrocuted.'
***Następnie** mężczyzna uklęka;*
'Next, the man kneels down;'
jakaś wewnętrzna siła zdaje się go rozsadzać od wnętrza.
'some inner force seems to blow him up from the inside.'
Z jego ciała zaczynają wyrastać korzenie,
'Roots start to grow from his body,'
które przytwierdzają go do podłoża.
'and fasten him to the ground.'
***Następnie** korzenie pną się wysoko w górę.*
'Next, the roots grow higher and higher.'

As the example illustrates, the passage's viewing frame is deictic; that is, anchored to an external viewing centre. The connector *następnie* 'next' is in fact

redundant because it is not instrumental in advancing the plot. Still, the tendency to structure the timeline with the help of connectors is strong enough to make the students' structuring patterns statistically different from those of the Polish monolinguals and the immigrants. This has been borne out by the Kruskall-Wallis test performed both on the scores for sequential connectors and on the total connector scores in the monolingual, immigrant and student groups. In both cases, the results were significant. For instance, the ranks for the total connector scores in the monolingual, immigrant and student samples were 37.9, 41.8 and 56.8 respectively. The differences between them were significant, with $H(2) = 10.15$, $p = 0.006$. Post hoc Mann-Whitney U tests, with alpha at 0.01 (Bonferroni correction) revealed a significant difference between the monolingual Poles and the students ($p = 0.003$), and between the immigrants and the students ($p = 0.01$). No statistical differences were found by the Wilcoxon matched pairs test ($Z = 0.61$, $p = 0.54$, $Mdns = 1$) between the numbers of connectors in Polish and English. This suggests that the students' narrative styles are similar in both their languages. They are, however, significantly different from those of the other populations participating in the study. It is also worth noting that not all of the students consistently resort to anaphoric linking in structuring the timeline. Passages with no explicit marking also occur in the dataset but are rare ($N = 4$). Because no significant differences were found between the ranks ($1 = 40.91$, $2 = 46.93$, $3 = 48.65$, respectively) for the use of simultaneous connectors by the three groups ($H(2) = 2.25$, $p = 0.32$), the most plausible interpretation is that the students mingle the anaphoric linking strategy, which appears to be more prominent semantically, with an external viewing frame, creating an eclectic narrative style of their own. Such a strategy is evidence of a shared L1/L2 narrative and discourse structuring competence. What makes this interpretation particularly convincing is a moderate positive correlation ($\rho = 0.38$, $p = 0.04$) between the total connector scores for Polish and English. It seems that in the students' case, explicit marking in the two languages goes hand in hand. Moreover, the fact that it is the L1 that seems to be the most affected demonstrates the dynamic nature of bilingual competence and is definitely a sign of convergence of the constituent language systems.

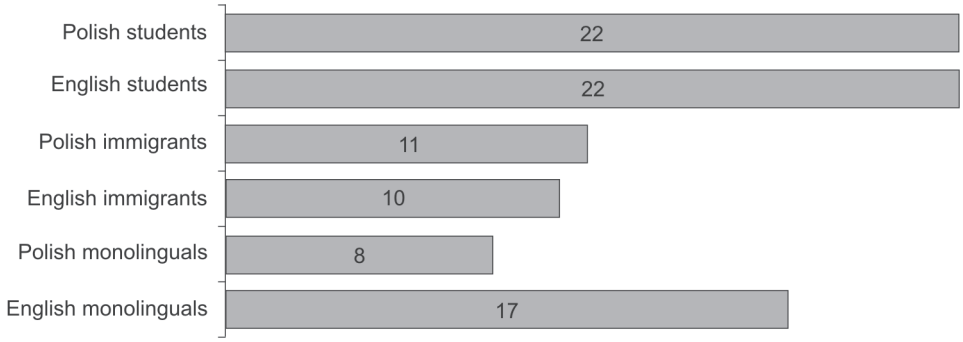

Figure 11. The number of sequential connectors

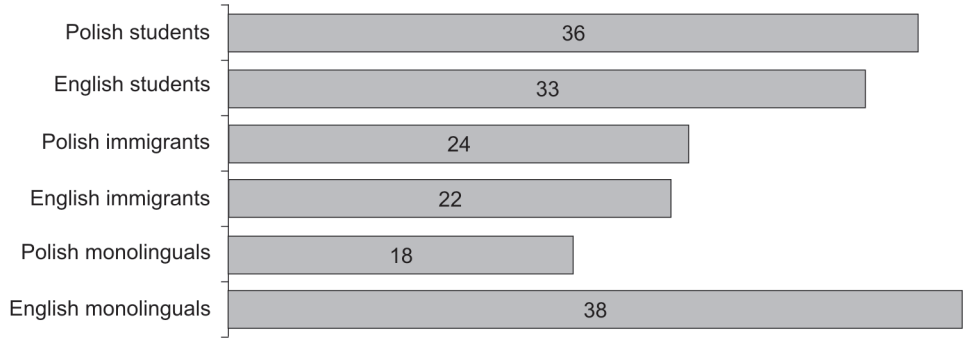

Figure 12. The total number of temporal connectors

Despite the relatively high use of anaphoric linking, the student retellings also contain expressions of simultaneity, such as simultaneous connectors (N = 14) and adverbial and adjectival participles (N = 33). The connectors include *kiedy*, *gdy* 'when' (N = 11), *w tej chwili* 'at this moment' (N = 2), and *w miarę* 'as' (N = 1). The adjectival participles are less common (N = 9) than their adverbial counterparts (N = 24) but show the most variability by modifying the sentence's subject (N = 6) and object (N = 3). This behaviour is in contrast to the monolingual and immigrant groups who used adjectival participles mainly as object modifiers. In Polish, adverbial participles denote simultaneity regardless of whether they are used before or after the main clause, as demonstrated in Example 43. Such patterns for creating parallel plot strands (N = 5) can be found in the Polish monolingual dataset (N = 4) and in the students' English stories, which is evidence of cross-linguistic influence from the L1. No significant contrasts were found for the expression of simultaneity ($H(2, N = 90) = 5.05$, $p = 0.08$, ranks: 1 = 43.73, 2 = 39.28, 3 = 53.48) among the three groups.

(43) *Człowiek obserwując te zmiany,*
'Observing these changes, the man'
pada na ziemię
'falls to the ground'
i traci rękę.
'and loses his arm.'
Leżąc w agonii,
'Lying in agony,'
doświadcza niemożliwego zjawiska jakim jest wyrośnięcie z jego brzucha krzaków,
'he experiences an impossible phenomenon, which is the growing of bushes out of his stomach,'
w których ostatecznie został uwięziony.
'which (the bushes) eventually entrapped him.'

The general impression that the narratives give is that of linear chronology, however. It is reinforced by the presence of sequential connectors which seem to overshadow the simultaneous developments represented by participles. The most common connectors include *po czym* and *wtedy* 'then' (N = 6 and N = 3, respectively), as well as *po chwili* 'after a moment' (N = 5), *następnie* 'next' (N = 6), and *wkrótce* 'soon' (N = 2).

In conclusion, the obtained data reveal the vulnerability of bilinguals' languages to cross-linguistic influence. The most conspicuous traces of the influence were detected in the domain of temporal structuring where the L1 patterns are remarkably similar to those developed for the L2. As a result, the immigrants' and students' languages exhibit signs of convergence. This is the case with both explicit marking and expressions of simultaneity. There is, however, context-specific variability between the groups because the students' L1 bears the marks of cross-linguistic influence from the L2, while the immigrants' L2 resembles their L1 more closely, but not strongly enough to produce a statistically significant result. The reason why the students' L1 Polish shows significant differences from the monolinguals, while their L2 English does not seem to be overtly affected is the following: Although the students use a comparable number of temporal connectors and therefore do not differ from the English monolinguals statistically, they clearly favour sequential connectors. Because these preferences are carried over to their L1 Polish, where a high rate of connectors is unusual and where explicit temporal marking is much scarcer, the students' structuring preferences diverge significantly from those of the Polish monolinguals.

The immigrants, too, manifest uniformity of temporal structuring in both their languages. Nevertheless, because they used only half of the sequential connectors found in the student dataset, they differ significantly from the students. On the other hand, the immigrants do not diverge from the Polish or English monolinguals, yet the scarcity of explicit connectors brings their style into line with that of Polish monolinguals. In this connection, a factor that also needs explaining is the high frequency of sequential connectors in the student dataset. This is difficult to explain in cross-linguistic terms, given the dearth of temporal marking in the Polish control retellings. In English, sequential connectors are more frequent, which might have encouraged the students to use them as a more transparent sequencing strategy in both languages. It is also worth mentioning that some of their English connectors were clearly calqued from Polish, e.g. *a short instance after.* This supports the conclusion that the students' sequencing patterns are developmental in nature and reflect their understanding of the narrative and temporal patterns of L2 English.

Equally difficult to explain from a cross-linguistic perspective is the very high granularity index in the students' Polish narratives. It is likely that it is the result of their willingness to follow the task instructions and provide as much detail as they could, often at the expense of style and content. Also, segmentation patterns in one language may reinforce the intensity of segmentation in the other.

Finally, a promising avenue for future studies is the use of present participles in expressions of simultaneity. Here, the Polish monolinguals consistently use adverbial and adjectival participles, with the latter postmodifying the object in the vast majority of cases. These trends are followed by the immigrants who replicate the monolingual template. The students in turn appear to diverge from both groups by using postnominal adjectival participles in a subject-modifying position, alongside adverbial participles. Although statistical comparisons did not produce a significant difference between the participant groups, this tendency is also evident in the students' English dataset, and hence deserves more extensive research based on much larger samples.

5.2.7. Discussion

In general, the study confirms the assumptions of the von Stutterheim framework with respect to event segmentation and structuring. However, it has identified a few areas of contrast that are not accounted for by von Stutterheim and hence require further research and clarification. What follows is a summary of the findings in the form of answers to the research questions posed in Section 5.2.3.

5.2.7.1. Event segmentation: A cross-linguistic perspective

A1: When describing identical visual input in writing, Polish and English monolinguals do not show differences in the level of detail they choose to verbalize, thus demonstrating almost identical granularity levels.

A2: The immigrants do not diverge from the English monolinguals in the number of events encoded for verbalization. Neither do the students, despite the fact that their narratives show the highest granularity values of the three groups. Since the students' proficiency in L2 English correlates positively with granularity levels, it seems to be an obvious contributing factor. In Polish, the immigrants do not diverge from the monolingual template, either. The students, by contrast, with an unusually high granularity index, differ significantly from the immigrants and are close to being statistically different from the monolinguals. These results show the uniqueness of the students' segmentation behaviour in the L1 and highlight the L1's vulnerability to cross-linguistic influence. Also noteworthy is the fact that the same segmentation tendencies have been found in both of the bilinguals' languages in both the immigrant and student samples. This provides evidence that segmentation patterns transfer across languages, giving rise to a joint reservoir of speech planning procedures (cf. Bylund 2011). Pavlenko (2011) calls this type of cross-language interaction conceptual convergence.

5.2.7.2. Temporal structuring in Polish and English

A3: Both Polish and English adopt an external, i.e. deictic, viewing frame in constructing the timeline for event description in a written film retelling. In Polish, explicit temporal markers are used minimally (8%). The chronology of events is created by the order of mention. Simultaneity is established mainly through the juxtaposition of the main clause with a present adverbial participle. Present adjectival participles and adverbials of time may also be used but are far less frequent. The preferred tense/aspect framework is the present imperfective. It is grammatically encoded in the verb and participles. In English, explicit temporal markers are relatively rare (17%) but are nevertheless more frequent than in Polish. The timeline is created by perfective verbs in the Simple Present. They are unmarked in terms of grammatical aspect. Simultaneity is instituted through the use of adverbials of time and present adverbial participles. Both show a similar frequency of use; sequential connectors are minimally less frequent. The use of the progressive is marginal and limited to setting up a temporal background for foregrounded events. Generally, the narratives do not express ongoingness. All the same, they share a number of information structuring devices with the online reports collected by the von Stutterheim team for unfolding events, i.e. the granularity index, the deictic viewing frame and the present time reference. The received explanation for these effects is that they result from the prominence of the progressive aspect whose formative influence on information structure extends beyond online reports.

A4: Like the English monolinguals, the immigrants adopt a deictic viewing perspective for their narratives. This allows them to keep the use of explicit temporal connectors to a minimum. The timeline is composed of verbs in the Simple Present tense conveying a punctual and perfective reading, despite being grammatically unmarked for aspect. In some narratives, however, perfective events are intermingled with those in progressive aspect, which disrupts the flow of events in the episode. Since the progressive has been used by the less proficient bilinguals, its use is deemed to signify incomplete acquisition of L2 English aspectual contrasts. Another area of focus is the use of present participles. Being rare in the immigrant narratives, they include both adjectival and adverbial participles. The adjectival participles are slightly more common, and are most likely a carry-over from L1 Polish. Because most of them modify the object, they do not affect the timeline directly, in contrast to adverbial participles that modify the subject. As a result, the majority of the narratives follow a simple linear plot which, for the most part, is devoid of simultaneous developments.

The students in turn apply a number of tenses and aspectual contrasts, and hence deprive the timeline of regularity. They do not use the Present Progressive extensively but tend to occasionally substitute it for the Simple Present, disrupting the timeline as a result. Additional disruption to the timeline is caused by applying present adverbial participial clauses as sentence openers, a function sanctioned

by L1 Polish but avoided in English. Expressions of simultaneity are scarce and encompass present participles, adverbial and adjectival, as well as connectors. The adjectival participles postmodify the subject; another pattern encouraged by the L1. The viewing frame is for the most part deictic. However, it is at times disorganized by sequential connectors in a manner typical of non-aspect languages, such as German, which follow the *x then y* pattern in structuring events.

In Polish, the immigrants use the present imperfective to create a linear timeline, and only occasionally diversify it by encoding simultaneous events. Temporal marking is scarce due to the deictic viewing frame. Simultaneity is instituted mainly through the application of present adverbial participles and simultaneous connectors. Adjectival participles are infrequent and belong to the object noun phrase. These structuring patterns do not significantly differ from those exhibited in L2 English.

The students, too, seem to create a uniform narrative style in both their languages, combining elements of a deictic viewing frame and anaphoric structuring, which is more transparent semantically. The timeline is linear; the preferred tense/aspect is the present imperfective whose interpretation is subject to contextual constraints typical of a narrative. Simultaneity, created through connectors and adverbial and adjectival participles, seems to be overshadowed by foregrounded sequencing connectors. A unique element is the use of postnominal adjectival participles in a subject-modifying position.

5.2.7.3. The setting of L2 learning and use

A5: In line with the results of Study 1, the setting of L2 learning and use proves to have a verifiable effect not on aspects of L2 English but on L1 Polish. The most affected group in the study are the students. Accordingly, their L1 diverges from that of the immigrants and the Polish monolinguals in the area of granularity and structuring. Moreover and specifically to the student group, the numbers of temporal structuring devices found in the episode descriptions correlate across the students' two languages, providing evidence that the conceptualization matrices they follow overlap and form a unitary system.

Apart from these quantitative contrasts, which have been captured by statistical analysis, there are also much subtler qualitative differences, particularly in the application of L2 English aspect and tense and in domains concerned with the construction of the timeline. Although the results of statistical analysis do not reveal significant differences between the three groups in the use of the (perfective) simple verb forms in the Simple Present, nor indeed in the general expression of simultaneity and sequentiality of events, careful examination shows that the student and immigrant samples achieve time structuring effects by different means. The students use a number of tenses and aspectual perspectives throughout the episode

and as a result construct an erratic timeline. They achieve a sequencing effect through the application of sequential connectors that enforce chronological order on the constituent events. Moreover, in expressing simultaneity, they rely on L1 Polish structuring patterns and use present adjectival participles in the position of post-nominal subject modifiers. The immigrants, on their part, appear to use temporal connectors reluctantly, which brings them into line with the Polish monolinguals' structuring preferences. In fact, in this area, they seem to demonstrate in-between behaviour in both languages since they do not differ from either monolingual control group. The less proficient individuals are prone to use the Present Progressive to recount the story's events. Finally, the immigrants' timeline is relatively simple and devoid of expressions of simultaneity. The few that have been used involve both adverbial and adjectival participles. The latter postmodify the object.

All in all, both groups have developed a style in their own right. Because the immigrants have less trouble creating a regular storyline in their L2 English, they come across as being more in tune with the narrative schemas of English monolinguals. In Polish, the immigrants conform to monolingual norms, while the students diverge from them on account of using a higher number of sequential connectors.

Since the expatriate and student samples are comparable in terms of age, proficiency and length of intensive L2 contact, the main difference between them is the setting of L2 learning and use. Taking into account the quantitative and qualitative aspects of L2 use observed in the dataset, the conclusion to be drawn is that naturalistic learning is more conducive to developing and maintaining monolingual-like levels of proficiency in both languages of a bilingual. This conclusion needs to be kept in perspective and interpreted against the background characteristics of the participants, however. At the time of the research, most of the immigrants had stayed in an English-speaking country for an average of three years and were in contact, albeit limited, with their L1. This probably created favourable conditions for perfecting their L2 skills, whilst preventing loss of aspects of the L1. All of them had learned English at school and were not aware of their exact level of proficiency in English on arrival in their new country. Previous research conducted in a natural setting (Bylund 2009) identified the age of onset of bilingualism as critical to instigating L1 restructuring processes along the patterns of the L2. This finding does not apply to the participants of this study since they were all young adults with established L1 competence and a working knowledge of L2 English at the time of immigration.

It is difficult, though, to explain why it is the students' L1 rather than the L2 that shows the greatest vulnerability to cross-linguistic influence. The most likely explanation is that the students' overuse of explicit temporal markers in Polish has its source in conceptual convergence of the narrative schemas deployed in both languages and that it is motivated by clarity and salience. In English, the students' structuring problems seem to be developmental in nature and result from

insufficient exposure to the L2. Furthermore, the fact that these processes have been detected in a written task, which allows greater control of language, reveals the intensity and permanence of cross-linguistic effects in conceptualization.

5.2.7.4. The influence of individual background variables

A6: Among the background variables considered in the analysis are the length of stay in an L2 environment, the amount of L1 Polish and L2 English use, the score on a proficiency test taken to signify L2 proficiency, and the amount of L2 English study. The last factor is indicative of the intensity of exposure to the L2 in a formal context. Of these variables, a significant correlation has been obtained for the immigrants' segmentation index in Polish and daily use of L2 English, for the students' L2 proficiency level and the segmentation index in English, and for the immigrants' L2 proficiency and use of adverbials in English. Considering that the immigrants had greater exposure to L2 English, which has a similar resolution level to Polish, the first correlation sheds light on the extent to which cross-linguistic interaction in the domain of segmentation is reinforced by similarity between the languages involved.

As regards the second correlation, L2 proficiency has repeatedly been found to go hand in hand with aspects of bilingual performance (Athanasopoulos 2011a). Study 1 shows it to be the main factor responsible for L2 naming and categorization. Segmentation patterns are no exception, either. What is also noteworthy is that in a formal learning context, L2 proficiency overrides factors such as the amount of L2 study. In a natural learning environment, neither L2 proficiency nor the length of residence in an L2 country seem to have an effect on segmentation, a finding replicating Bylund (2010) and Study 1. It must be pointed out, however, that Bylund's research did not directly address the issue of L2 competence, since the participants were all judged to be near-native speakers of L2 Swedish. The observed lack of correspondence may be indicative of the fact that granularity of description is deeply ingrained in the discourse structure of language, and may as a result be acquired through interaction at an earlier stage of L2 learning.

In the area of temporal structuring, L2 proficiency is linked to the use of adverbials for the purpose of expressing simultaneity. Indeed, among the immigrants, the most participles have been used by individuals with the highest proficiency level, i.e. the C2 level. This suggests that diversifying the timeline in terms of simultaneity is no simple matter and tends to be implemented by the most competent L2 users.

5.2.7.5. Implications for conceptualization processes

A7: According to von Stutterheim and Nüse (2003), high granularity levels are an attribute of aspect languages which sensitize their speakers to the phasal nature of events, thus inducing greater resolution of description. Since both Polish and English are aspect languages, they do not diverge from each other in this respect. What is more, in a bilingual setting, the languages subtly reinforce each other's segmentation patterns, even in a situation of limited exposure. A question that remains unanswered is whether grammaticalized aspectual distinctions permeate pre-speech conceptualization in its entirety, and consequently affect segmentation in a variety of (con)texts, or whether they are limited to specific contexts and/or genres. The present study shows that high resolution of description is not limited to the use of progressive aspect and is therefore likely to extend beyond retellings and narratives. These preliminary observations require further research and clarification, however. Also, to obtain more insight into the dynamics of segmentation, it would be necessary to include in the study a non-aspect language such as German or Swedish and examine segmentation from the vantage point of aspectual contrasts rather than similarities. Previous research on the subject (Nüse 2003) shows that German narratives are characterized by lower granularity and consequently leave out some of the *minor events* that tend to be verbalized in English. Because decisions about content are made beyond the syntactic and semantic levels, they are attributed to the conceptualizer.

In the domain of temporal structuring, both Polish and English adopt a deictic viewing frame with an external viewing centre. In von Stutterheim's opinion, this perspective is attributable to the fact that the progressive aspect encodes ongoingness of events which, as a result, take reference outside the narrative frame. The narratives collected in the present study minimize the importance of the progressive by showing that a deictic viewing frame is not constrained by its presence, and that in film retellings in English the choice of verb forms is determined by the interaction between the available encoding options and the physical nature of the event itself. More specifically, the grammatically unmarked perfective Simple Present forms are ideally suited for verbalizing a sequence of rapidly changing events, such as the events on a football field during a game. The Present Progressive, on the other hand, requires that events are extended in time so that they are in progress at the time of speaking. It follows that the aspectual distinction offered by English in the context of retellings is that between temporally extended and unextended (punctual) events. Polish, by contrast, portrays present events as uncompleted, thus implicating rather than directly expressing ongoingness. Moreover, in Polish aspect is obligatorily marked on the verb, while simple verb forms tend to be imperfective. From a bilingual point of view, these contrasts call for a quick appraisal of the situation at hand in terms of diverging linguistic criteria. Consequently, the conceptual switch from grammatically encoded imperfective to grammatically

unmarked perfective may be hard to accomplish, particularly in a formal learning context where exposure to L2 English is limited. This explains why even the most advanced L2 English students resort to the simple Past and Present Progressive (see Table 20) more often than the monolingual and immigrant groups, presumably in an attempt to accommodate the punctual nature of the English perfective and the ongoing character of the Polish imperfective. To keep things in perspective, it is important to bear in mind that these tendencies are not representative of group behaviour because at the most basic level, both bilingual groups do not statistically diverge from the monolinguals in the area of tense use or temporal structuring.

The bareness and syntactic opaqueness of the English perfective may also be the reason behind the students' preference for sequential connectors, which they use twice as often as the simultaneous ones in both languages. An alternative explanation is that they might not have acquired the lexical and syntactic means for encoding simultaneity in the L2. The most significant finding is that structuring strategies transfer from the L2 into the L1, bringing about a statistically significant difference from the L1 monolinguals, and a significant moderate correlation between the L1 and L2. This is an obvious sign of convergence, also at the level of pre-production planning. It indicates that when telling a story in the L1 or L2, the students draw on a shared narrative blueprint. This type of cross-linguistic conceptual fusion has not been reported for the immigrants, whose use of connectors in both languages is, nevertheless, similar.

Two findings of the study deserve attention in future research. First, considering that the conceptualizer is responsible for decisions about whether or not the message to be verbalized should contain MANNER information in a Verb-framed language or be conceptualized as a bounded event with an endpoint in a non-aspect language, or both, the processes of selection and structuring must be temporally synchronized for conceptualization to efficiently embrace both aspects of encoding. Second, the assumption that grammaticalized meanings are more potent conceptually than lexicalized meanings, which is central to the current debate, can easily be tested against the concept of simultaneity. In English, the concept is encoded both lexically and syntactically, thus creating opportunities for comparisons with respect to the effect that these encoding options might have on non-verbal conceptual processes. At this stage, this research does not offer insight into deeper conceptual levels.

5.2.8. Conclusion

The present study has examined conceptualization procedures, as envisaged by von Stutterheim and Nüse (2003), who, following Levelt (1999) and Habel and Tappe (1999), see conceptualization as a process of transforming perceptual and conceptual information into linguistic forms. Because the available evidence indicates that pre-

speech processing is constrained by linguistic patterns, language is considered to be the main source of insight into the transformation processes involved.

The inclusion of proficient bilinguals offers a more focused perspective on the process because it reveals the extent to which each stage of conceptualization is influenced by language and cross-linguistic interaction through a comparison of bilingual data with the monolingual template. In this respect, selection shows considerable autonomy and language-specificity, while segmentation indexes demonstrate cross-language similarity and/or convergence. Temporal structuring exhibits signs of L1/L2 convergence, too.

In their present formulation, conceptualization and related cross-linguistic phenomena lend themselves to analysis by the measures recommended by the Conceptual Transfer Hypothesis.

Chapter 6

Concluding remarks

6.1. Theoretical issues and suggestions for future research

The main objective of this work has been to evaluate the theoretical and empirical validity of the Conceptual Transfer Hypothesis, as advanced by Jarvis and Pavlenko (2008). A central tenet of the hypothesis is that "certain instances of […] a person's use of one language are influenced by conceptual categories acquired through another language." This in practical terms means that the categories of one language have an impact "on the verbalization of thoughts in another," a process Jarvis and Pavlenko (2008: 115) term conceptual transfer. The transfer is instigated by language-mediated concepts, defined as "multi-modal mental representations that develop in the process of language socialization, sensitize speakers of particular languages to particular conceptual distinctions, and allow them to perform naming, identification, comprehension, and inferencing along the same lines" (Jarvis and Pavlenko 2008: 115).

It cannot escape notice that the hypothesis assumes bidirectional causality between language and cognition, with the L1 influencing cognition and with cognition affecting the L2, and vice versa. Yet, from a theoretical and empirical point of view, the direction of the causality remains an unresolved issue, and as such has sparked a spirited academic debate. The following quotation from Cook (2011a: 10) gives a vivid picture of the situation: "[…] whether language creates differences in cognition or reflects pre-existing cognitive differences is the central and most bitterly controversial problem of research into language and cognition." Another unresolved question is whether and to what extent multi-modal representations of experience can be probed through language in a language-neutral manner. Unfortunately, on account of its preoccupation with cross-language interaction, the theory sidelines language-neutral cognition, giving linguistic data the function of both cause and effect of the processes in question. Because Jarvis and Pavlenko (2008) clearly distinguish between linguistic and non-linguistic representations, this is a sign of incongruity. Discussing the nature

of the language-cognition interface, Evans (2009a) explains that linguistic forms provide only a schematic glimpse into conceptual content. Moreover, research shows that they are often at odds with non-linguistic categorization (Ameel et al. 2005). Therefore, for the hypothesis to span the conceptual and linguistic levels, it should systematically draw on both linguistic and non-linguistic explorations, in line with the premise that in order to assess the influence of concepts acquired in one language on the use of another, it is necessary to find out if language has an impact on cognition in the first place. In the light of the above, it is necessary to conclude that the Conceptual Transfer Hypothesis does not offer a consistent theoretical framework for investigating the complexity of the relation between language and multi-modal representations of experience. In fact, in many ways, it seems to waver between positions advocating the unity and separation of semantic and conceptual representations (see Sections 1.1.1 and 1.1.2). More specifically, the linguistic bias makes the hypothesis akin to the unitary view of linguistic representations, the reference to multi-modal concepts draws it closer to the separatist view and the Linguistic Relativity Hypothesis, a point discussed at length in Chapters 2 and 3. This duality of interpretation is best illustrated by the following quotation: "Whenever relevant, […] we will also discuss evidence from studies of non-verbal cognition that clarify whether performance differences indeed stem from differences in mental representations" (Jarvis and Pavlenko 2008: 115), and the fact that the evidence Jarvis and Pavlenko (2008) present in support of their claims comes largely from studies of language production and use.

It is also informative to note in passing that in her earlier publications on the subject of conceptual representation in bilinguals, Pavlenko (1999, 2005) discussed the issue in terms of linguistic relativity, drawing a sharp distinction between linguistic, i.e. lexical and semantic, and non-linguistic, i.e. conceptual, levels of representation, and calling for the application of non-verbal techniques in related research. It must be said, however, that in the articles, non-linguistic conceptual explorations received little attention and were overshadowed by references to bilingualism and bilingual language use. In my opinion, this led to the CTH's departure from linguistic relativity and to the reformulation of its tenets in favour of linguistic analysis. Pavlenko's (2011) most recent edited volume marks a return to the relativistic camp and signals a shift to a guarded data-driven approach on the part of the author.

Another hurdle that research into conceptual-linguistic interaction needs to overcome is the complexity of the conceptual domain, the multiplicity of the processes operating across its various levels, and the fact that they function in an integrated manner. Such complexity calls for diversity of research methods and interpretation. It also makes it difficult to isolate language-neutral processes at the language-thought interface so that they can be probed for linguistic effects (cf. Lucy 2011). To date, such effects have been found mainly for categorization and recall of visually presented stimuli. Abstract referents pose a methodological problem as they

are not perceptible and do not lend themselves easily to non-verbal explorations. Online conceptualization needs to be tapped through language production tests but is not open to conscious reflection for the most part. Consequently, corroborating non-linguistic evidence is derived from processes that co-occur with speech production, i.e. direction of eye-gaze, gesture and speech onset time. An additional obstacle is the lack of pervasiveness of some of the non-verbal effects. For instance, as Study 2a has shown, endpoint encoding in directed motion events is determined by factors such as prior knowledge of the motion sequence and the online/offline character of the task. As a result, relativistic effects can only be detected in specific contexts and are limited in scope. Taken together, the research conducted to date offers fragmentary glimpses of the language-cognition interface, forcing researchers to resort to more and more sophisticated research techniques, as well as precluding a clear and full resolution of the issue.

The last and probably the most aggravating problem is the apparent lack of agreement among researchers over what constitutes linguistic effects on cognition. The neo-Whorfian school of linguistic relativity represented by Lucy (1992a, 1996, 2004, 2011) and Levinson (1997, 2003a), among others, advances the view that such effects include conceptual patterns mirroring linguistic patterns in non-verbal performance. However, research into the conceptual basis of emotion words shows that the presence of emotion words influences categorization, memory and perception of emotion, while the absence of such words makes people unable to identify emotion and impairs the ability to perceive it in a categorical way (Gendron et al. 2012). According to Malt and Ameel (2011), such a lack of discriminating power in a non-verbal condition is indicative of an absence of relativistic effects. Gendron et al. (2012), by contrast, disregard the non-verbal dimension and classify as relativistic the effects evoked by the presence of emotion words. Thinking for speaking appears to be equally contentious. While Slobin (1996, 2003, 2004, 2005) and Han and Cadierno (2010) see language-driven thinking as a (weak) form of linguistic relativity, Athanasopoulos (2011b) regards it as being solely linguistic. In thinking-for-speaking-oriented research, the non-verbal dimension, i.e. co-speech gestures and eye tracking, shows linguistic effects during speech production but not outside linguistic communication, a non-Whorfian effect according to Papafragou et al. (2006; cf. Öyzüyrek et al. 2008). Obviously, such a disparity of opinion must have an impact on research design and subsequent data interpretation, and contributes to the confusion surrounding this issue. It also extends to the debate over the nature of conceptual transfer and has clearly been echoed in the approach taken by Jarvis and Pavlenko (2008).

Despite these inconsistencies, which are partly to blame on the chaos created by current theories of language and concepts (cf. Swoyer 2011: 34), there can be no doubt that the hypothesis is a valuable contribution to the field and that it has staked out new territories for SLA and bilingualism research. An area deserving attention is that of pragmatics (cf. Levinson 2003b; Odlin 2005). Because its concern

lies with meaning that extends beyond the literal semantics of words and needs to be inferred, negotiated, presupposed and/or implied, it is a domain that naturally draws on the experience-based conceptual reservoirs developed for language and language-based communication.

However, the most promising line of enquiry seems to be that undertaken within the theoretical framework of multi-competence. The theory arises from the finding that bilinguals' languages do not behave like autonomous and isolated codes, but instead manifest properties typical of integrated and interacting systems, while retaining their formal distinctiveness. Moreover, since the bilingual lexicon is nested within a larger cognitive framework which is non-linguistic but may be affected by the operations within and across the embedded linguistic systems, multi-competence creates a platform for multifarious cross-modal interactions that embrace the entire human mind. Of significance to the conceptual transfer debate are processes spanning the linguistic and non-linguistic levels of representation, some of which fall within the scope of relativistic investigations. The new dimension offered by multi-competence is that it creates a space for the interaction and development of cognitive mechanisms that govern both language-related and language-neutral knowledge. Because these mechanisms are not restricted to a particular code, and indeed may also control other mental activities, they are assumed to be non-linguistic and are hence termed conceptual and/or cognitive in the literature (Cummins 2005). Some of them involve the ability to think abstractly about language and aspects of its structure and usage, others encompass executive procedures that manifest themselves through language in the form of stylistic enhancement (Kecskes and Papp 2000). Still others may be linked to other modalities, as is the case with imagery. What they have in common is that they arise from the need to process language and hence stand a good chance of being more intense in bilingual subjects. As regards research, its focus will be turned from language as a formative force influencing retention and categorization, and redirected to processes to do with language-mediated reasoning, information and skill transfer, literacy, as well as broadly defined mental efficiency (Baker 2001; Bialystok 2001a; Cummins 1991, 2000; Durgunoğlu 1997, 2001b; Francis N. 2000; Kecskes and Papp 2000, 2003).

6.2. Practical implications of Studies 1 and 2

One of the practical merits of this project is that it explores areas of language which so far have received little or no attention from teachers and course designers. These include aspects of information structure in a narrative, i.e. granularity levels, viewing perspectives and the temporal alignment of events. Although Polish and English show marked similarities in all three areas, the student narratives demonstrate that the principles of information structure do not simply transfer

from one language to another and that the acquisition of L2 conceptualization frames is influenced by a variety of developmental and cross-linguistic factors. More specifically, the way the students used temporal connectors is peculiar by English standards but does not stem from L1 Polish. The students clearly developed a style of their own and applied it consistently in both languages. Also, the use of present participles by Polish-English bilinguals diverges from the preferences of monolingual English speakers, most likely giving rise to an unnatural style and the so-called *foreign discourse accent*. One of the first questions that should be addressed in future investigations is whether conceptualization procedures are permeable to explicit teaching and correction, and under what conditions they can be influenced, if at all. Some evidence to the affirmative comes from advanced L2 writing and shows that explicit instruction has a positive impact on genre awareness and writing competence (Yasuda 2011).

Another area well-positioned to benefit from the findings of this and related studies is translation. In addition to the stylistic clumsiness caused by the *foreign* use of expressions of simultaneity and exaggerated temporal structuring, a potential cause for concern for translators is the encoding of directed motion. Here, Polish and English group together typologically (Talmy 2000; Slobin 2003); however, the study found that in the context of narratives, English shows a preference for PATH verbs and encodes MANNER sparingly. In Polish, the proportion of PATH to MANNER verbs is reversed. Consequently, translations from Polish into English may contain an unnatural surplus of MANNER information. Moreover, if translators resort to using MANNER verbs, which appear to be less frequent in English, the translation may acquire a formal and/or literary character. Obviously, the decision whether or not to include certain types of linguistic information in a translated text rests with the translator and depends on his/her appraisal of text type, style, genre and the like. However, without awareness of typical encoding patterns in the languages involved, the naturalness of translation is bound to suffer.

The question of linguistic naturalness and typicality gained prominence in Study 1 examining naming patterns. Even though using names other than those produced by the monolingual controls does not explicitly violate the rules of *correctness*, it is nevertheless likely to influence the precision of communication, and give rise to misunderstandings and misconceived relationships. A conclusion to follow logically from the juxtaposition of the bilingual results is that because friendship terms are abstract and do not have direct equivalents in Polish, the key to their successful acquisition must lie in the availability of contextual clues which have the capacity to clarify naming conventions. The immigrants' results, in particular, point in this direction, lending support to Jarvis and Pavlenko's (2008) belief in the importance of immersion and language socialization processes for L2 acquisition. Accordingly, in the absence of authentic context, as is the case with classroom L2 teaching, every care should be taken to provide ample authentic linguistic and nonlinguistic input in the form of DVD and audio materials, interaction with native speakers of the L2 and

interactive ELT software. Compromising on context may result in a development of culturally displaced semantic categories, as exemplified by the student data.

The study also casts doubt on the reliability of those placement tests that focus solely on the receptive ability to recognize appropriate vocabulary and grammar by means of multiple choice tests. Although both bilingual samples obtained similar proficiency scores on a standardized placement test, they demonstrated considerable differences in both naming and narrative ability. The project did not examine accuracy rates, i.e. the number of structures or words classified as *errors* by monolinguals. However, informal estimates show the student L2 error rates to be higher than those of the immigrants. The conclusion is that proficiency measures overlooking production disguise lack of skill in essential areas of language and should be used with caution.

Finally, on a more general level, both studies and the Conceptual Transfer Hypothesis present a new perspective on L2 teaching which, until now, has been routinely geared towards teaching diverse linguistic systems to express uniform sets of concepts and/or ideas. The realization that conceptual fields may differ across languages as do the linguistic structures employed to express them creates a platform for teaching conceptual structure in addition to linguistic material. The rationale for a change of focus is best expressed in the words of Cook (2011b: 512), who lays down the following principle: "If Japanese speakers classify some objects by material, English speakers by shape, then teaching Japanese to English speakers involves familiarizing them with the Japanese classification of objects and substances." Such an approach would inevitably take on board cultural and contextual issues, broadening the range of learning activities to be used in class and expanding the learners' mindsets as a result. Here, however, Cook (2011b: 512) concludes pessimistically, "so far this does not seem to have occurred in language teaching, apart from nods in the direction of 'culture'."

A research initiative that attempts to fill the vacuum mentioned by Cook is the study by Bielak and Pawlak (2011, 2013), who, working within the framework of cognitive grammar (CG) (Langacker 1987), compared the effectiveness of traditional grammar descriptions with their cognitivist equivalents. In line with cognitivist principles, the latter emphasized the conceptual underpinning of the Present Simple and Present Continuous tenses. The results show the meaning/concept-based instruction to be moderately effective and comparable to the more conventional interpretations of the two tenses. The authors conclude that more research is needed to understand the complex interaction between the clarity of explanation and duration of treatment on the one hand, and successful acquisition on the other. Viewed from the perspective of the present discussion, the study indicates that the inclusion of concept-based instruction may be a promising step towards improving the quality of L2 teaching, provided it is carefully orchestrated and fine-tuned to the learners' proficiency level.

6.3. Evaluation of the research

According to Jarvis and Pavlenko (2008: 35), the occurrence of cross-linguistic influence needs to be confirmed by the following three types of evidence:

1. Intragroup homogeneity showing that a particular behaviour is characteristic of individuals with the same combination of languages.

2. Intergroup heterogeneity which confirms that a particular behaviour does not occur in (groups of) individuals who know different combinations of languages.

3. Cross-linguistic performance congruity; this concentrates on whether an individual's use of one language is motivated by his/her other language.

Thanks to rigorous statistical tests and less stringent measures of individual tendencies, the study has produced findings that meet all three criteria. More specifically, each participant group was regarded as an independent entity with a definite set of characteristics, including language, and as such was statistically compared with the other participant groups. Moreover, in some tests it was necessary to exclude outliers from the analysis, securing intragroup homogeneity. Comparisons with monolingual controls yielded evidence of intergroup heterogeneity, while analysis of behaviour in both the L1 and L2 in identical contexts ensured cross-linguistic performance congruity. A question that Jarvis and Pavlenko (2008) do not answer is whether the same criteria apply to conceptual transfer which does not always follow linguistic patterns.

A potential weakness of this project is that it uses linguistic patterns as sources of insight into the underlying conceptual architecture. Consequently, the obtained results shed light on linguistic phenomena and cross-linguistic influence, while aspects of the underlying non-verbal cognition need to be inferred from linguistic data. Such an approach is consistent with the recommendations of the CTH, which vaguely encourages researchers to use non-verbal tests rather than making it an absolute necessity. As explained in Section 6.1, this flaw is most likely the result of a persistent lack of agreement over what constitutes linguistic effects on thought and how they manifest themselves in non-verbal cognition and language. From an empirical point of view, it undermines the validity of the data. As regards task design, subject selection and comparability, sample size and timing issues, they follow the guidelines of Pavlenko (2008a) and Wei and Moyer (2008) for research into bilingualism, and do not pose a threat to the validity of the project's findings. To ensure reliability, the criteria according to which the data were coded and evaluated are presented in the sections on data analysis.

To conclude, despite its limitations, the Conceptual Transfer Hypothesis has reignited the debate over the structure of the mental lexicon and inspired a new wave of research into bilingual mental representations, linguistic relativity and cross-linguistic influence. There can be no doubt that the discussion that followed introduced new perspectives on research design and data interpretation, as well

as creating new frameworks and avenues for research. It is my fervent hope that this work has added to the debate, bringing it a (tiny) step closer to unraveling the complexities of the human mind and its relation to language.

Appendix

Background questionnaire for English monolinguals

Please complete the questionnaire by underlining the most relevant answer and providing additional information where applicable.

1. Native language:
a) English b) other (please specify ……..)

2. Sex:
a) M b) F

3. Age:

4. Level of education:
a) secondary school b) university degree (BA, MA, other, specify.……..…)

5. Profession
a) student (specify type of course ……)
b) teacher/lecturer (specify type of institution ……)
c) other (specifity.……..…)

6. Country of residence (specify.……..)

7. Knowledge of languages other than English
a) Spanish (beginner, elementary, intermediate, advanced, native-like)
b) French (beginner, elementary, intermediate, advanced, native-like)
c) German (beginner, elementary, intermediate, advanced, native-like)
d) other, specify.……. (beginner, elementary, intermediate, advanced, native-like)

8. Do you use and/or study any of the languages listed above regularly?
a) yes (specify which one ……) b) no

Background questionnaire for Polish monolinguals and bilinguals

Proszę podkreślić właściwą odpowiedź oraz uzupełnić brakujące informacje.

1. Płeć M K

2. Wiek:

3. Wykształcenie
a) średnie (liceum, technikum; podkreślić właściwą odpowiedź),
b) wyższe (licencjat, inżynier, magister),
c) zawodowe,
d) student (kierunek i rok studiów)……..

4. Miejsce pobytu
a) Polska,
b) kraj anglojęzyczny (jaki?)……..Od kiedy?……

5. Miejsce i czas rozpoczęcia nauki języka angielskiego…….

6. Znajomość języków obcych
a) angielski (początkujący, podstawowy, średnio zaawansowany, zaawansowany, jak Anglik),
b) niemiecki (początkujący, podstawowy, średnio zaawansowany, zaawansowany, jak Niemiec),
c) francuski (początkujący, podstawowy, średnio zaawansowany, zaawansowany, jak Francuz),
d) rosyjski (początkujący, podstawowy, średnio zaawansowany, zaawansowany, jak Rosjanin),
e) hiszpański (początkujący, podstawowy, średnio zaawansowany, zaawansowany, jak Hiszpan),
f) inne, jakie (początkujący, podstawowy, średnio zaawansowany, zaawansowany itd.).
……

7. Czy aktualnie któryś z tych języków jest regularnie używany?
NIE
TAK (Który ? W jaki sposób?……)

8. Czytam prasę i literaturę
a) po polsku,
b) po angielsku,
c) w obu językach.

9. Oglądam telewizję
a) po polsku,
b) po angielsku,
c) w obu językach.

10. Rozmawiam z rodziną
a) po polsku,
b) po angielsku,
c) w obu językach.

11. Rozmawiam ze znajomymi
a) po polsku,
b) po angielsku,
c) w obu językach.

12. W ciągu tygodnia mówię po polsku
a) przez mniej niż 10 godz.,
b) 10–15 godz.,
c) 15–30 godz.,
d) więcej niż 30 godz.

13. W ciągu tygodnia mówię po angielsku
a) przez mniej niż 10 godz.,
b) 10–15 godz.,
c) 15–30 godz.,
d) więcej niż 30 godz.

14. Przebywałem (przebywam) w kraju anglojęzycznym
a) przez miesiąc,
b) 6 miesięcy,
c) rok,
d) krócej niż miesiąc,
e) dwa lata,
f) trzy lata i dłużej,
g) nigdy,
h) inne.

15. W pracy posługuję się głównie
a) angielskim,
b) polskim,
c) obydwoma językami.

16. Pobieram naukę
a) po angielsku,
b) po polsku,
c) w obu językach.

17. W ciągu tygodnia uczę się/pracuję nad językiem angielskim
a) mniej niż 3 godz.,
b) 4–10 godz.,
c) 10–15 godz.,
d) 15–30 godz.

Polish version of the *friendship* questionnaire

Jakiego słowa użyłbyś(abyś) określając **relacje łączące Cię** z następującymi osobami; **nie są to związki uczuciowe** (**seksualne**). Można użyć tego samego słowa kilka razy. Można również użyć dwóch słów w odniesieniu do tej samej sytuacji.

(1) Poznaliśmy się w zeszłym tygodniu na imprezie, gdzie padła propozycja wspólnego wyjazdu do Grecji w gronie kilku osób. Wyjeżdżamy w najbliższy piątek.
Osoby te to moi/moje……..…….

(2) Mamy wiele wspólnych zainteresowań, np. uwielbiamy turystykę pieszą. Co miesiąc, czasami nawet częściej, wyjeżdżamy za miasto by odpocząć i powłóczyć się po okolicy.
Osoba ta jest ……

(3) Chodziliśmy razem do szkoły i mieszkaliśmy przy tej samej ulicy. W soboty często spotykaliśmy się najpierw na placu zabaw, a potem, kilka lat później, na korcie tenisowym. Teraz często chodzimy razem do pubu, by porozmawiać. Wiemy o sobie prawie wszystko.
Osoba ta jest ……

(4) Przedstawiono nas sobie kilka tygodni temu na zebraniu komitetu osiedlowego. Czasami spotykam go/ją na dworcu kolejowym w drodze do pracy.
Osoba ta jest ……

(5) Mieszkamy w domu za miastem. Małżeństwo mieszkające obok jest przyjaźnie nastawione i często sobie pomagamy. Na przykład, w zeszłym roku podlewaliśmy ich ogród, gdy latem wyjechali na urlop.
Osoby te to ……

(6) Od pięciu lat spotykamy się na uczelni, gdzie razem studiujemy ten sam kierunek. Czasami razem uczymy się do egzaminu, a w wolnej chwili, tzn. dość rzadko, idziemy do kina.
Osoby te to moje/moi……

(7) Odpoczywam w jego/jej towarzystwie. To zadziwiające, że dwie osoby o tak odmiennych charakterach mogą tak przyjemnie spędzać wspólnie czas. Z zadowoleniem odkryłam/em, że moja sympatia jest odwzajemniona.
Osoba ta jest ……

(8) Spotykamy się na spacerze z psem i często rozmawiamy, podczas gdy nasi pupile gonią się na trawie. W ten sposób dowiaduję się wielu nowin o mieszkających w okolicy osobach.
Osoba ta to mój/moja……..……

(9) Polubiłam(em) nasze rozmowy i spotkania tak bardzo, że po kilku dniach ciszy zaczyna mi czegoś brakować, więc sięgam po telefon.
Osoba ta jest ……

(10) Poznaliśmy się na studiach i od razu odkryliśmy, że wiele nas łączy. Świetnie się rozumiemy i miło spędzamy wspólnie czas, często nie robiąc nic szczególnego, np. opowiadając dowcipy lub grając w szachy.

Osoba ta jest ……

(11) Często rozmawiamy z sobą przez telefon lub w Internecie. Nasze rozmowy są bardzo szczere i głębokie. Czasami nawet przypominają spowiedź.
Osoba ta jest ……

(12) Jest nas w sumie pięcioro. Bawimy się świetnie we własnym towarzystwie i często spędzamy wolny czas idąc do pubu na piwo.
Osoby te to ……

(13) Poznaliśmy się na konferencji, gdzie siedzieliśmy obok siebie w trakcie uroczystej kolacji. Po interesującej rozmowie wymieniliśmy wizytówki.
Osoba ta jest ……

(14) Od kilku lat jeździmy razem na obozy narciarskie. W zasadzie wszyscy zaczynaliśmy od zera i łączy nas wiele przygód na stokach i trasach zjazdowych. Lubimy z sobą jeździć.
Osoby te to moje/moi……

(15) Nasze dzieci chodzą do tej samej klasy, więc spotykamy się na wywiadówce oraz gdy odbieramy je ze szkoły. Czasami, gdy muszę zostać w pracy dłużej, odprowadza mojego syna do domu.
Osoba ta to ……

(16) Jest jedną z niewielu osób, którym ufam i z którymi często rozmawiam o problemach. Podziwiam doświadczenie, bezinteresowność i mądrość, którymi się kieruje.
Osoba ta jest ……

(17) Pracuję w banku jako doradca podatkowy. Wciąż pamiętam jak pierwszego dnia mój szef przedstawił mnie osobom tam zatrudnionym. Wszyscy byli bardzo mili i życzliwi.
Osoby te to ……

(18) Gdy zmieniłam mieszkanie pomógł/ogła mi w trakcie przeprowadzki, a gdy mój samolot wylądował o piątej nad ranem odebrał/a mnie z lotniska. Nie wiem, czy dałabym sobie radę bez tej pomocy.
Osoba ta jest ……

(19) Pracuję w dziesięcioosobowym zespole, gdzie każdy ma przydzielone odrębne funkcje i zadania. Jednak często nie jestem w stanie podjąć decyzji bez zasięgnięcia rady pozostałych członków zespołu.
Osoby te to ……

(20) Wykładam na wyższej uczelni. Poproszono mnie o przeprowadzenie wykładu w zastępstwie wykładowcy, który miał wypadek i został odwieziony do szpitala.
Wykładowca ten to ……

(21) Chociaż znamy się dość długo, nie jestem pewny/a, czy mogę jej ufać. Lubię z nią rozmawiać; czasami nawet zapraszam ją do siebie na kawę. Jednak odnoszę wrażenie, że istnieje między nami pewien dystans.
Osoba ta to ……

(22) Chodzimy razem do tej samej klasy i często spotykamy się po lekcjach by razem odrabiać zadanie. Jest nas razem pięć osób i dość dobrze nam się z sobą uczy.

Osoby te to moje/moi ……

Które z przedstawionych sytuacji odnoszą się do relacji (można pominąć niektóre z podanych poniżej punktów)
a) bardzo bliskich i osobistych (podaj numery sytuacji).
……
……
……
b) zażyłych lecz mniej osobistych, również zawodowych (podaj numery sytuacji).
……
……
……
c) typowo towarzyskich (podaj numery sytuacji).
……
……
……
d. typowo zawodowych (podaj numery sytuacji).
……
……
……

Results of the Fisher exact test for name distribution patterns (Test 1)

Scenario number	English monolinguals vs. immigrants tested in English		English monolinguals vs. students tested in English		Students vs. immigrants tested in English	
	exact sig. (2-sided)	Cramer's V	exact sig. (2-sided)	Cramer's V	exact sig. (2-sided)	Cramer's V
S1	**0.012**	0.487	**0.001**	0.548	**0.001**	0.602
S2	0.091	0.333	**0.000**	0.511	0.076	0.426
S3	0.492	0.342	0.399	0.370	0.139	0.400
S4	0.459	0.373	**0.049**	0.422	0.051	0.442
S5	0.748	0.240	0.461	0.258	0.748	0.240
S6	**0.040**	0.552	**0.000**	0.603	0.177	0.449
S7	0.432	0.311	0.868	0.340	0.671	0.337
S8	0.100	0.400	0.297	0.363	**0.036**	0.450
S9	0.195	0.324	0.242	0.346	1.000	0.130
S10	0.208	0.344	0.298	0.399	**0.013**	0.515
S11	**0.001**	0.570	**0.004**	0.544	**0.004**	0.530
S12	**0.032**	0.521	0.143	0.519	0.233	0.496
S13	0.052	0.415	0.091	0.313	0.700	0.294
S14	**0.003**	0.500	**0.000**	0.626	**0.012**	0.538
S15	0.090	0.406	**0.000**	0.560	**0.000**	0.588
S16	**0.003**	0.471	**0.001**	0.607	**0.008**	0.486
S17	1.000	0.161	0.601	0.274	0.735	0.226
S18	0.492	0.224	**0.020**	0.421	0.206	0.377
S19	0.784	0.318	0.721	0.441	0.099	0.475
S20	0.741	0.342	**0.005**	0.475	0.188	0.345
S21	0.121	0.388	0.597	0.276	**0.011**	0.476
S22	0.918	0.315	0.110	0.503	0.126	0.501

Results of the Fisher exact test for name distribution patterns (Test 1)

Scenario number	Results of the Fisher exact test		Students vs. immigrants tested in Polish		Polish monolinguals vs. students tested in Polish	
	Exact sig. (2-sided)	Cramer's V	Exact sig. (2-sided)	Cramer's V	Exact sig. (2-sided)	Cramer's V
S1	0.112	0.267	1.000	0.130	0.353	0.190
S2	0.133	0.370	0.052	0.404	0.185	0.348
S3	0.397	0.197	1.000	0.130	0.325	0.240
S4	0.510	0.216	**0.042**	0.329	0.300	0.254
S5	0.618	0.225	1.000	0.186	0.618	0.226
S6	0.055	0.360	0.116	0.293	**0.015**	0.435
S7	**0.029**	0.519	0.310	0.370	0.623	0.360
S8	0.130	0.268	1.000	0.072	0.245	0.219
S9	0.781	0.299	0.225	0.400	0.786	0.290
S10	**0.010**	0.428	0.550	0.297	**0.019**	0.454
S11	0.822	0.255	0.248	0.248	**0.045**	0.361
S12	0.538	0.266	0.743	0.186	0.852	0.212
S13	**0.004**	0.473	0.220	0.344	0.267	0.321
S14	0.252	0.343	0.850	0.224	**0.032**	0.437
S15	1.000	0.188	0.731	0.141	0.506	0.162
S16	0.612	0.260	1.000	0.316	0.612	0.260
S17	0.146	0.289	0.543	0.154	0.085	0.323
S18	0.106	0.320	0.235	0.327	0.509	0.271
S19	0.728	0.260	1.000	0.159	0.849	0.200
S20	0.279	0.317	0.349	0.300	0.634	0.253
S21	**0.001**	0.439	0.158	0.236	0.070	0.284
S22	**0.049**	0.367	**0.037**	0.381	0.142	0.300

Dominant name scores for particular categories in the friendship questionnaire

Table 21. The results for English monolinguals in terms of category dominant names

Dominant word score (N):		Situation no.
Friend	29	18
	28	2
	27	3
	25	7, 9
	24	10
	23	14
	20	16
	19	6
	18	11
	16	15, 22
	15	12
	13	1
Colleague	26	20
	24	17
	18	19
Acquaintance	22	21
	18	8
	17	13
	15	4
Neighbour	25	5

Table 22. The results for Polish monolinguals in terms of category dominant names

Dominant word score (N):		Situation no.
Przyjaciel	29	16
	27	3
	21	11
	19	7
	14	9
	13	18
Kolega	25	22
	23	6
	19	10, 14, 21
	15	2
	11	12, 20
	10	19
Znajomy	27	13
	26	1
	25	4
	23	15
	18	8
	14	17
Sąsiad	20	5
Współpracownik	10	19

Table 23. The results for the immigrants tested in English

Dominant word score (N):		Situation no.
Friend	29	9
	28	16, 18
	26	3, 10
	24	7
	21	2
	19	11
	16	22
	15	14, 15
	11	1
	10	6
	9	12
Colleague	25	17, 20
	22	19
	11	13
Acquaintance	16	21
	11	4, 8, 13
Neighbour	24	5
	11	8
Mate	9	12

Table 24. The results for the immigrants tested in Polish

Dominant word score (N):		Situation no.
Przyjaciel	27	16
	24	3
	17	9, 11, 18
	14	10
	12	7
	10	2
Kolega	27	22
	23	6
	17	20
	15	17
	14	14
Współpracownik	12	19
Znajomy	30	1
	24	21, 15
	23	8
	22	4
	16	13
	10	2
	9	12
Sąsiad	21	5

Table 25. The results for the students tested in English

Dominant word score (N):		Situation no.
Friend	28	9
	24	7
	23	3
	22	11
	20	18
	18	16
	17	2, 10
	12	22
	10	12
	7	14
Colleague	27	17
	21	20
	19	19
	12	6, 13
Acquaintance	24	21
	22	15
	21	8
	20	4
	17	1
	12	13
Neighbour	25	5

Table 26. The results for the students tested in Polish

Dominant word score (N):		Situation no.
Przyjaciel	27	16
	23	3
	19	7
	12	11
	10	18
Kolega	20	22
	17	6
	15	2
	12	9, 14
	11	10, 12, 20
Znajomy	29	1
	26	15
	24	4
	23	8
	22	13
	18	21
	12	14
Sąsiad	20	5
Współpracownik	14	19
	12	17

Bibliography

Aitchinson, Jean. 1992. *Language Change: Progress or Decay*? Cambridge: Cambridge University Press.

Aitchinson, Jean. 1997. *Words in the Mind: An Introduction to the Mental Lexicon*. Oxford: Basil Blackwell.

Allen, Shanley, Ash Özyürek, Sotaro Kita, Amanda Brown, Reyhan Furman, Tomoko Ishizuka, and Fujii Mihoko. 2007. Language-specific and universal influences in children's packaging of Manner and Path: A comparison of English, Japanese, and Turkish. *Cognition* 102: 16–48.

Ameel, Eef, Gert Storms, Barbara C. Malt, and Steven A. Sloman. 2005. How bilinguals solve the naming problem. *Journal of Memory and Language* 53: 60–80.

Ameel, Eef, Gert Storms, Barbara C. Malt, and Fons Van Assche. 2009. Semantic convergence in the bilingual lexicon. *Journal of Memory and Language* 60: 270–290.

Andonova, Elena, Ani Gosheva, Jasmina Sadat Schaffai, and Armina Janyan. 2007. Second language gender system affects first language gender classification. In Istvan Kecskes and Liliana Albertazzi, eds., *Cognitive Aspects of Bilingualism*, 271–300. London: Springer.

Anggoro, Florencia and Dedre Gentner. 2003. Sex and seniority: the effects of linguistic categories on conceptual judgments and memory. In Richard Alterman and David Kirsh, eds., *Proceedings of the Twenty-Fifth Annual Conference of the Cognitive Science Society*, 91–96. Mahwah, NJ: Lawrence Erlbaum Publishers.

Apresjan, Jurij D. 1995. *Semantyka leksykalna: synonimiczne środki języka*. Wrocław: Zakład Narodowy im. Ossolińskich.

Arabski, Janusz. 2007. General trends in language transfer studies. In Janusz Arabski, ed., *Challenging Tasks for Psycholinguistics in the New Century*, 11–21. Katowice: Oficyna Wydawnicza.

Aske, Jon. 1989. Path predicates in English and Spanish: a closer look. In Kira Hall, Michael Meacham, and Richard Shapiro, eds., *Proceedings of the Fifteenth Annual Meeting of the Berkeley Linguistics Society*, 1–14. Berkeley, California: Berkeley Linguistics Society.

Athanasopoulos, Panos. 2006. Effects of the grammatical representation of number on cognition in bilinguals. *Bilingualism: Language and Cognition* 9 (1): 89–96.

Athanasopoulos, Panos. 2009. Cognitive representation of colour in bilinguals: The case of Greek blues. *Bilingualism: Language and Cognition* 12 (1): 83–95.

Athanasopoulos, Panos. 2011a. Cognitive restructuring in bilingualism. In Aneta Pavlenko, ed., *Thinking and Speaking in Two Languages*, 29–65. Bristol: Multilingual Matters.

Athanasopoulos, Panos. 2011b. Linguistic relativity in SLA. Thinking for speaking (book review). *International Journal of Bilingual Education and Bilingualism* 14 (5): 621–625.

Athanasopoulos, Panos and Chise Kasai. 2008. Language and thought in bilinguals: the case of grammatical number and nonverbal classification preferences. *Applied Psycholinguistics* 29: 105–123.

Athanasopoulos, Panos, Benjamin Dering, Alison Wiggett, Jan-Rouke Kuipers, and Guillaume Thierry. 2010. Perceptual shift in bilingualism: Brain potentials reveal plasticity in pre-attentive colour perception. *Cognition* 116: 437–443.

Athanasopoulos, Panos, Ljubica Damjanovic, Andrea Krajciova and Miho Sasaki. 2011. Representation of colour concepts in bilingual cognition: The case of Japanese blues. *Bilingualism: Language and Cognition* 14 (1):1–9.

Au, Terry K. 1983. Chinese and English counterfactuals: The Sapir-Whorf hypothesis revisited. *Cognition* 15: 155–187.

Austin, John L. 1961. The meaning of a word. In James O. Urmson and Geoffrey J. Warnock, eds., *Philosophical Papers*, 23–43. Oxford: Clarendon Press.

Baker, Colin. 2001. *Foundations of Bilingual Education and Bilingualism.* Clevedon: Multilingual Matters.

Bardovi-Harvig, Kathleen. 1998. Narrative structure and lexical aspect: Conspiring factors in second language acquisition of tense-aspect morphology. *Studies in Second Language Acquisition* 20: 471–508.

Barsalou, Lawrence W. 1983. Ad hoc categories. *Memory & Cognition* 11: 211–227.

Barsalou, Lawrence W. 1993. Flexibility, structure and linguistic vagary in concepts: manifestations of a compositional system of perceptual symbols. In Alan F. Collins, Susan E. Gathercole, Martin A. Coway and Peter E. Morris, eds., *Theories of Memory*, 29–101. Hove, UK: Lawrence Erlbaum Associates.

Barsalou, Lawrence W. 2008. Grounded Cognition. *Annual Review of Psychology* 59: 617–645.

Barsalou, Lawrence W. 2009. Simulation, situated conceptualization, and prediction. *Philosophical Transactions of the Royal Society of London* 364: 1281–1289 (doi: 10.1098/rstb.2008.0319).

Barsalou, Lawrence W. 2012. The human conceptual system. In Michael Spivey, Ken McRae and Marc F. Joanisse. *The Cambridge Handbook of Psycholinguistics*, 239–258. Cambridge: Cambridge University Press.

Barsalou, Lawrence W., and Katja Wiemer-Hastings. 2005. Situating abstract concepts. In Diane Pecher and Rolf A. Zwaan, eds., *Grounding Cognition: The role of Perception and Action in Memory, Language and Thought*, 129–163. New York: Cambridge University Press.

Bassetti, Benedetta. 2007. Bilingualism and thought: Grammatical gender and concepts of objects in Italian-German bilingual children. *International Journal of Bilingualism* 11: 251–273.

Bassetti, Benedetta. 2011. The grammatical and conceptual gender of animals in second language users. In Vivian Cook and Benedetta Bassetti, eds., *Language and Bilingual Cognition*, 357–384. New York: Psychology Press.

Beavers, John, Beth Levin and Shiao Wei Tham. 2010. The typology of motion expressions revisited. *Journal of Linguistics* 46: 331–377.

Bialystok, Ellen. 2001a. *Bilingualism in Development*. Cambridge: Cambridge University Press.

Bialystok, Ellen. 2001b. Metalinguistic aspects of bilingual processing. *Annual Review of Applied Linguistics* 21: 169–181.

Bialystok, Ellen. 2005. Consequences of bilingualism for cognitive development. In Judith Kroll and Annette M.B. de Groot, eds., *Handbook of Bilingualism*. Oxford: Oxford University Press, 417–432.

Bielak, Jakub, and Mirosław Pawlak. 2011. Teaching English tense and aspect with the help of cognitive grammar: An empirical study. *Studies in Second Language Learning and Teaching* 1 (3): 365–400.

Bielak, Jakub, and Mirosław Pawlak. 2013. *Applying Cognitive Grammar in the Foreign Language Classroom*. Dordrecht: Springer.

Bierwisch, Manfred, and Robert Schreuder. 1992. From concepts to lexical items. *Cognition* 42 (1–3): 23–60.

Bloom, Alfred. 1981. *The Linguistic Shaping of Thought: A Study in the Impact of Language and Thinking in China and the West*. Hillsdale, NJ: Lawrence Erlbaum.

Boas, Franz. 1916. *The Mind of Primitive Man*. New York: Macmillan.

Bogdan, David R. and William, J. Sullivan. 2009. *The Tense-Aspect System of Polish Narrative*. Muenchen: LINCOM GmcH.

Bohnemeyer, Jürgen. 2003. NSM without the Strong Lexicalization Hypothesis. *Theoretical Linguistics* 29: 211–222.

Bojar, Bożenna. 1979. *Opis semantyczny czasowników ruchu oraz pojęć związanych z ruchem*. Warszawa: Wydawnictwo Uniwersytetu Warszawskiego.

Boroditsky, Lera, and Lauren A. Schmidt. 2000. Sex, syntax and semantics. In Lila R. Gleitman and Aravind K. Joshi, eds., *Proceedings of the 22nd Conference of the Cognitive Science Society*, 42–47. Mahwah, NJ: Lawrence Erlbaum Publishers.

Boroditsky, Lera, Lauren A. Schmidt and Webb Phillips. 2003. Sex, syntax and semantics. In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 61–80. Cambridge, Massachusetts: The MIT Press.

Bowerman, Melissa, and Soonja Choi. 2003. Space under construction: language-specific spatial categorization in first language acquisition. In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 387–428. Cambridge, Massachusetts: The MIT Press.

Brown, Amanda, and Marianne Gullberg. 2008. Cross-linguistic influence in L1-L2 encoding of Manner in speech and gesture. A study of Japanese speakers of English. *Studies in Second Language Acquisition* 30: 225–251.

Brown, Roger, and Eric Lenneberg. 1954. A study in language and cognition. *Journal of Abnormal and Social Psychology* 49: 454–462.

Bylund, Emanuel. 2009. Effects of age of L2 acquisition on L1 event conceptualization patterns. *Bilingualism: Language and Cognition* 12 (3): 305–322.

Bylund, Emanuel. 2010. Segmentation and temporal structuring of events in early Spanish-Swedish bilinguals. *International Journal of Bilingualism* 15 (1): 56–84.

Bylund, Emanuel. 2011a. Language-specific patterns in event conceptualization: Insights from bilingualism. In Aneta Pavlenko, ed., 108–142. *Thinking and Speaking in Two Languages*. Bristol: Multilingual Matters.

Bylund, Emanuel. 2011b. Ultimate attainment of event segmentation and temporal structuring patterns in speakers of L2 Swedish. *Vigo International Journal of Bilingualism* 8: 29–53.

Bylund, Emanuel, and Scott Jarvis. 2011. L2 effects on L1 event conceptualization. *Bilingualism: Language and Cognition* 14 (1): 47–59.

Cadierno, Teresa. 2004. Expressing motion events in a second language: A cognitive typological perspective. In Michele Achard and Susanne Niemeier, eds., *Cognitive Linguistics, Second Language Acquisition, and Foreign Language Teaching*, 19–49. Berlin: Mouton de Gruyter.

Cadierno, Teresa. 2010. Motion in Danish as a second language: does the learner's L1 make a difference? In ZhaoHong Han and Teresa Cadierno, eds., *Linguistic Relativity in SLA. Thinking for Speaking*, 1–33. Clevedon, UK: Multilingual Matters.

Cadierno, Teresa, and Karen Lund. 2004. Cognitive linguistics and second language acquisition: Motion events in a typological framework. In Bill Van Patten, Jessica Williams, Susanne Rott and Mark Overstreet, eds., *Form-Meaning Connections in Second Language Acquisition*, 139–153. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Cadierno, Teresa, and Lucas Ruiz. 2006. Motion events in Spanish L2 acquisition. *Annual Review of Cognitive Linguistics* 4: 183–216.

Cadiot, Pierre, Franck Lebas and Yves-Marie Visetti. 2006. The semantics of motion verbs: action, space, and qualia, 175–206. In Maya Hickmann and Stephane Robert, eds., *Space in Languages*. Amsterdam: Benjamins.

Carlson, Neil. R., Neil G. Martin and William Buskist. 2004. *Psychology.* London: Pearson.

Carroll, Mary, and Christiane von Stutterheim. 2002. Typology and information organization: perspective taking and language-specific effects in the construal of events. In Anna Ramat, ed., *Typology and Second Language Acquisition*, 365–402. Berlin/New York: Mouton de Gruyter.

Carroll, Mary, Christiane von Stutterheim and Ralf Nüse. 2004. The language and thought debate: A psycholinguistic approach. In Christopher Habel and Thomas Pechmann, eds., *Approaches to Language Production*, 183–218. Berlin: deGruyter.

Casasanto, Daniel. 2008. Who's afraid of the big bad Whorf? Crosslinguistic differences in temporal language and thought. *Language Learning* 58: Suppl. 1: 63–79.

Casasanto, Daniel. 2009. When is a linguistic metaphor a conceptual metaphor? In Vyvyan Evans and Stephanie Pourcel, eds., *New Directions in Cognitive Linguistics*, 127–146. Amsterdam: John Benjamins.

Casasanto, Daniel. 2010. Space for thinking. In Vyvyan Evans and Paul Chilton, eds., *Language, Cognition and Space: State of the Art and New Directions*, 453–478. London: Equinox Publishing.

Casasanto, Daniel, and Lera Boroditsky. 2008. Time in the mind: Using space to think about time. *Cognition* 106: 579–593.

Caskey-Sirmons, Leigh A., and Nancy P. Hickerson. 1977. Semantic shift and bilingualism: Variation in the colour terms of five languages. *Anthropological Linguistics* 19: 358–367.

Chłopek, Zofia. 2012. *Conceptual Transfer in the Multilingual Mind: Perceptions of the Gender of Sexless Entities*. Wrocław–Dresden: Neisse Verlag.

Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge: The MIT Press.

Chomsky, Noam. 1991. Linguistics and cognitive science: Problems and mysteries. In Asa Kasher, ed., *The Chomskyan Turn*, 26–53. Oxford: Blackwell.

Cieślicka, Anna, and David Singleton. 2004. Metaphorical competence and the L2 learner. In Birgit Henriksen and Kirsten Haastrup, eds., *Angles on the English Speaking World*, 77–91. Copenhagen: University of Copenhagen.

Comrie, Bernard. 1981. *Language Universals and Typology. Syntax and Morphology*. Oxford: Blackwell.

Comrie, Bernard. 1985. *Tense*. Cambridge: Cambridge University Press.

Cook, Vivian. 2003. Introduction: The changing L1 in the L2 user's mind. In Vivian Cook, ed., *Effects of the Second Language on the First*, 1–18. Clevedon, UK: Multilingual Matters.

Cook, Vivian. 2011a. Relating language and cognition. In Vivian Cook and Benedetta Bassetti, eds., *Language and Bilingual Cognition*, 3–22. New York: Psychology Press.

Cook, Vivian. 2011b. Linguistic relativity and language teaching. In Vivian Cook and Benedetta Bassetti, eds., *Language and Bilingual Cognition*, 509–518. New York: Psychology Press.

Cook, Vivian, and Mark Newson. 1996. *Chomsky's Universal Grammar*. Oxford: Blackwells.

Cook, Vivian, Benedetta Bassetti, Chise Kasai, Miho Sasaki and Jun Arata Takahashi. 2006. Do bilinguals have different concepts? The case of shape and material in Japanese L2 users of English. *International Journal of Bilingualism* 2: 137–152.

Croft, William, and Alan D. Cruse. 2004. *Cognitive Linguistics*. Cambridge: Cambridge University Press.

Cubelli, Roberto, Daniela Paolieri, Lorella Lotto and Remo Job. 2011. The effect of grammatical gender on object categorization. *Journal of Experimental Psychology. Learning, Memory and Cognition* 37 (2): 449–460.

Cummins, Jim. 1991. Interdependence of first and second language proficiency. In Ellen Bialystok, ed., *Language Processing in Bilingual Children*, 70–89. Cambridge: Cambridge University Press.

Cummins, Jim. 2000. *Language, Power and Pedagogy: Bilingual Children in the Crossfire*. Clevedon, UK: Multilingual Matters.

Cummins, Jim. 2005. Teaching for cross-language transfer in dual language education: possibilities and pitfalls. Paper presented at the TESOL Symposium on Dual Language Education: Teaching and Learning in Two Languages in the EFL Setting. Bogazici University, Istanbul, Turkey.

Czechowska, Natalia, and Anna Ewert. 2011. Perception of motion by Polish-English bilinguals. In Vivian Cook and Benedetta Bassetti, eds., *Language and Bilingual Cognition*, 287–314. London: Psychology Press.

Dahl, Ősten. 1985. *Tense and Aspect Systems*. Oxford: Blackwell.

Daller, Michael H., Jeanine Treffers-Daller, and Reyhan Furman. 2011. Transfer of conceptualization patterns in bilinguals. *Bilingualism: Language and Cognition* 14 (1): 95–119.

Davies, Alan. 2006. The native speaker in applied linguistics. In Alan Davies and Catherine Elder, eds., *Handbook of Applied Linguistics*, 431–451. Oxford: Blackwell Publishing.

De Bot, Kees. 2004. The multilingual lexicon: Modelling selection and control. *The International Journal of Multilingualism* 1: 1–16.

Dewaele, Jean-Marc. 2008. Dynamic emotion concepts of L2 learners and L2 users: A second language acquisition perspective. *Bilingualism: Language and Cognition* 11 (2): 173–175.

Dewaele, Jean-Marc, and Daniel Véronique. 2001. Gender assignment and gender agreement in advanced French interlanguage: A cross-sectional study. *Bilingualism: Language and Cognition* 4: 275–297.

Dipper, Lucy T., Maria Black and Karen L. Bryan. 2005. Thinking for speaking and thinking for listening: The interaction of thought and language in typical and non-fluent comprehension and production. *Language and Cognitive Processes* 20 (3): 417–441.

Durgunoğlu, Aydin. Y. 1997. Reading in two languages. In Annette M. B. de Groot and Judith F. Kroll, eds., *Tutorials in Bilingualism: Psycholinguistic Perspectives*, 255–276. Lawrence Erlbaum Associates.

Durst, Uwe. 2003. The natural semantic metalanguage approach to linguistic meaning. *Theoretical Linguistics* 29 (3): 157–200.

Dworetzky, John P. 1994. *Psychology.* Minneapolis/St. Paul: West Publishing Company.

Ervin, Susan M. 1961. Semantic shift in bilingualism. *American Journal of Psychology* 74: 233–241.

Ervin, Susan M. 1962. The connotations of gender. *Word* (18): 249–261.

Evans, Vyvyan. 2009a. *How Words Mean.* Oxford: Oxford University Press.

Evans, Vyvyan. 2009b. The perceptual basis of spatial representation. In Vyvyan Evans and Paul Chilton, eds., *Language, Cognition and Space*. London: Equinox Press.

Evans, Vyvyan. 2011. Language and cognition: The view from cognitive linguistics. In Vivian Cook and Benedetta Bassetti, eds., *Language and Bilingual Cognition*. London: Psychology Press.

Evans, Vyvyan. 2012. Temporal frames of reference. Paper presented at the international conference *Time and Temporality in Language and Human Experience*, Łódź, 11–13 October 2012.

Evans, Vyvyan, and Melanie Green. 2006. *Cognitive Linguistics: An Introduction*. Mahwah, NJ: Lawrence Erlbaum.

Ewert, Anna. 2009. *L2 Users' L1*. Poznań: Pracownia Wydawnicza IFA UAM.

Férez, Paula Cifuentes. 2007. Human locomotion verbs in English and Spanish. *IJES* 7(1): 117–136.

Fillmore, Charles. 1975. An alternative to checklist theories of meaning. *Proceedings of the First Annual Meeting of the Berkeley Linguistics Society*, 123–131.

Fillmore, Charles. 1985. Frames and the semantics of understanding. *Quaderni di Semantica* VI: 222–254.

Finkbeiner, Mathew, Janet Nicol, Delia Greth and Kumiko Nakamura. 2002. The role of language in memory for actions. *Journal of Psycholinguistic Research* 31 (5): 447–457.

Fisiak, Jacek, Marta Lipińska-Grzegorek and Tadeusz Zabrocki. 1978. *An Introductory English-Polish Contrastive Grammar.* Warszawa: Państwowe Wydawnictwo Naukowe.

Flecken, Monique. 2010. *Event Conceptualization in Language Production of Early Bilinguals*. LOT: Utrecht.

Flecken, Monique. 2011. Event conceptualization in early bilinguals: Insights from linguistic as well as eye-tracking data. *Bilingualism: Language and Cognition* 14(1): 61–77.

Fodor, Jerrry A. 1975. *The Language of Thought.* Cambridge, MA: Harvard University Press.

Forceville, Charles. 2009. Non-verbal and multimodal metaphor in a cognitivist framework: Agendas for research. In Charles J. Forceville and Eduardo Urios-Aparisi, eds., *Multimodal Metaphor*, 19–42. Berlin: Mouton De Gruyter.

Francis, Norbert. 2000. The shared conceptual system and language processing in bilingual children: findings from literacy assessment in Spanish and Náhuatl. *Applied Linguistics* 21 (2): 170–204.

Francis, Wendy S. 2000. Clarifying the Cognitive Experimental Approach to Bilingual Research. *Bilingualism: Language and Cognition* 3 (1): 13–15.

Francis, Wendy S. 2005. Bilingual Semantic and Conceptual Representation. In Judith Kroll and Annette M. B. de Groot, eds., *Handbook of Bilingualism*, 251–267. Oxford: Oxford University Press.

French, Robert M., and Maud Jacquet. 2004. Understanding bilingual memory: Models and data. *TRENDS in Cognitive Sciences* 8 (2): 87–93.

Gabryś-Barker, Danuta. 2005. *Aspects of Multilingual Storage, Processing, and Retrieval*. Katowice: Wydawnictwo Uniwersytetu Śląskiego.

Geeraerts, Dirk. 2010. *Theories of Lexical Semantics.* Oxford: Oxford University Press.

Gendron, Maria, Lawrence Barsalou, Kristen A. Lindquist and Lisa Feldman Barrett. 2012. Emotion words shape emotion percepts. *Emotion* 12 (2): 314–325.

Gennari, Silvia P., Steven A. Sloman, Barbara C. Malt and Tecumseh W. Fitch. 2002. Motion events in language and cognition. *Cognition* 83: 49–79.

Gentner, Dedre, and Lera Boroditsky. 2001. Individuation, relativity and early word learning. In Melissa Bowerman and Stephen C. Levinson, eds., *Language Acquisition and Conceptual Development*, 215–256. Cambridge: Cambridge University Press.

Gentner, Dedre, and Susan Goldin-Meadow. 2003. Whither Whorf. In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 3–14. Cambridge, Massachusetts: The MIT Press.

Gevaert, Caroline. 2001. Anger in Old and Middle English: A "hot" topic? *Belgian Essays on Language and Literature*, 89–101.

Gilbert, Aubrey, L., Terry Regier, Paul Kay and Richard B. Ivry. 2006. Whorf is supported in the right visual field but not in the left. *PNAS* 103: 489–494.

Gleitman, Lila R., David January, Rebecca Nappa and John C. Trueswell. 2007. On the *give* and *take* between event apprehension and utterance formulation. *Journal of Memory and Language* 57: 544–569.

Goddard, Cliff. 1998. *Semantic Analysis.* Oxford: Oxford University Press.

Goddard, Cliff. 2002. The search for the shared semantic core of all languages. In Cliff Goddard and Anna Wierzbicka, eds., *Meaning and Universal Grammar: Theory and Empirical Findings*, 5–41. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Goddard, Cliff. 2003a. Whorf meets Wierzbicka: Variation and universals in language and thinking. *Language Sciences* 25: 393–432.

Goddard, Cliff. 2003b. Natural semantic metalanguage: Latest perspectives. *Theoretical Linguistics* 29 (3): 227–236.

Goddard, Cliff, and Anna Wierzbicka, eds. 2002. *Meaning and Universal Grammar: Theory and Empirical Findings.* Amsterdam/Philadelphia: John Benjamins Publishing Company.

Goldin-Meadow, Susan, Wing Chee So, Asli Özyürek and Carolyn Mylander. 2008. The natural order of events: How speakers of different languages represent events nonverbally. *PNAS* (105) 27: 9163–9168.

Green, David. 2000. Concepts, Experiments and Mechanisms. *Bilingualism: Language and Cognition* 3 (1): 16–18.

Grosjean, Francois. 1982. *Life with Two Languages*. Cambridge, Massachusetts: Harvard University Press.

Grosjean, Francois. 1998. Studying bilinguals: Methodological and conceptual issues. *Bilingualism: Language and Cognition* 1, 131–149.

Grosjean, Francois. 2001. The bilingual's language modes. In Janet L. Nicol, ed., *One Mind, Two Languages*, 1–22. Oxford: Blackwell.

Grosjean, Francois. 2008. *Studying Bilinguals*. New York: Oxford University Press.

Groot, Annette M. B. de 1992. Bilingual lexical representation: A closer look at conceptual representations. In Ram Frost and Leonard Katz, eds., *Orthography, Phonology, Morphology, and Meaning*, 389–412. Amsterdam: Elsevier.

Groot, Annette M. B. de 2000. On the source and nature of semantic and conceptual knowledge. *Bilingualism: Language and Cognition* 3 (1): 7–9.

Groot, Annette M. B. de 2002. Lexical representation and lexical processing in the L2 User. In Vivian Cook, ed., *Portraits of the L2 User*, 32–64. Clevedon: Multilingual Matters.

Groot, Annette M. B. de 2013. Bilingual memory. In Francois Grosjean and Ping Li, eds., *The Psycholinguistics of Bilingualism*, 171–191. Oxford: Wiley-Blackwell.

Groot, Annette M. B. de, and Judith F. Kroll. 1997. Lexical and conceptual memory in the bilingual: Mapping form to meaning in two languages. In Annette M.B. Groot and Judith F. Kroll, eds., *Tutorials in Bilingualism*, 167–198. Mahwah, NJ: Lawrence Erlbaum.

Gullberg, Marianne. 2011. Thinking, speaking and gesturing about motion in more than one language. In Aneta Pavlenko, ed., 143–169. *Thinking and Speaking in Two Languages*. Bristol: Multilingual Matters.

Habel, Christopher, and Heike Tappe. 1999. Process of segmentation and linearization in describing events. In Ralf Klabunde and Christiane von Stutterheim, eds., *Processes in Language Production*, 117–153. Wiesbaden: Deutscher Universitätsverlag.

Hakuta, Kenji. 1974. A preliminary report on the development of grammatical morphemes in a Japanese girl learning English as a second language. *Working Papers on Bilingualism* 3: 18–43.

Han, ZhaoHong, and Teresa Cadierno. 2010. Preface. In ZhaoHong Han and Teresa Cadierno, eds., *Linguistic Relativity in SLA. Thinking for Speaking*, xi-xv. Clevedon, UK: Multilingual Matters, 34–58.

Harkins, Jean, and Anna Wierzbicka. 1997. Language: A key issue in emotion research. *The European Journal of Social Sciences* 10 (4): 319–331.

Harley, Birgit. 1989. Transfer in the written compositions of French immersion students. In Hans W. Dechert and Manfred Raupach, eds., *Transfer in Language Production*, 3–19. Norwood, NJ: Ablex.

Hasko, Victoria. 2010. The role of thinking for speaking in adult L2 speech: The case of (non)unidirectionality encoding by American learners of Russian. In ZhaoHong Han and Teresa Cadierno, eds., *Linguistic Relativity in SLA. Thinking for Speaking*, 34–58. Clevedon, UK: Multilingual Matters.

Haugen, Einar. 1969. *The Norwegian Language in America: A Study in Bilingual Behaviour.* Bloomington: Indiana University Press.

Haugen, Einar. 1972. The stigmata of bilingualism. In Anwar S. Dil, ed., *The Ecology of Language*, 307–344. Stanford: Stanford University Press.

Herdina, Philip, and Ulirike Jessner. 2002. *A Dynamic Model of Multilingualism*. Clevedon: Multilingual Matters.

Hoffman, Eva. 1989. *Lost in Translation: A Life in a New Language.* New York: Penguin Publishers.

Hohenstein, Jill, Ann Eisenberg and Letitia Naigles. 2006. Is he floating across or crossing afloat? Cross-influence of L1 and L2 in Spanish-English bilingual adults. *Bilingualism: Language and Cognition* 9: 249–261.

Hout, Angelieke van. 2005. Imperfect imperfectives: On the acquisition of aspect in Polish. In Paula Kempchinsky and Roumyana Slabakova, eds., *Aspectual Inquiries*, 317–343. Dordrecht: Springer.

Imai, Mutsumi, and Dedre Gentner. 1997. A cross-linguistic study of early word meaning: Universal ontology and linguistic influence. *Cognition*, 62: 169–200.

Imai, Mutsumi, and Reiko Mazuka. 2003. Reevaluating linguistic relativity: Language-specific categories and the role of universal ontological knowledge in the construal of individuation. In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 429–464. Cambridge, Massachusetts: The MIT Press.

Jackendoff, Ray.1983. *Semantics and Cognition.* Cambridge, MA: MIT Press.

Jackendoff, Ray. 1990. *Semantic Structures.* Cambridge, MA: MIT Press.

Jackendoff, Ray. 1992. *Languages of the Mind*. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1994. Word Meanings and What it Takes to Learn Them: Reflections on the Piaget-Chomsky Debate. In Willis. F. Overton and David S. Palermo, eds., *The Nature and Organization of Meaning*, 129–144. Hillsdale, NJ: Erlbaum.

Jackendoff, Ray. 2002. *Foundations of Language: Brain, Meaning, Grammar, Evolution.* Oxford: Oxford University Press.

Janowska, Aleksandra. 1999. *Funkcje przestrzenne przedrostków czasownikowych w polszczyźnie*. Katowice: Wydawnictwo Uniwersytetu Śląskiego.

Jarvis, Scott. 1998. *Conceptual Transfer in the Interlingual Lexicon*. Bloomington: Indiana University Press.

Jarvis, Scott. 2000. Semantic and Conceptual Transfer. *Bilingualism: Language and Cognition* 3 (1): 19–21.

Jarvis, Scott. 2007. Theoretical and methodological issues in the investigation of conceptual transfer. *Vigo International Journal of Applied Linguistics* (VIAL) 4: 43–71.

Jarvis, Scott. 2009. Lexical transfer. In Aneta Pavlenko, ed., *The Bilingual Mental Lexicon. Interdisciplinary Approaches*, 99–124. Clevedon: Multilingual Matters.

Jarvis, Scott. 2011. Conceptual transfer: Crosslinguistic effects in categorization and construal. *Bilingualism: Language and Cognition* 14 (1): 1–8.

Jarvis, Scott, and Aneta Pavlenko. 2008. *Crosslinguistic Influence in Language and Cognition*. New York and London: Routledge.

Johnson, Mark. 1987. *The Body in the Mind*. Chicago: Chicago University Press.

Kecskes, Istvan. 2007. Synergic concepts in the bilingual mind. In Istvan Kecskes and Liliana Albertazzi, eds., *Cognitive Aspects of Bilingualism*, 29–62. Dordrecht: Springer.

Kecskes, Istvan, and Tünde Papp. 2000. *Foreign Language and Mother Tongue*. London: Lawrence Erlbaum Associates.

Kecskes, Istvan, and Tünde Papp. 2003. How to Demonstrate the Conceptual Effect of L2 on L1? In Vivian Cook, ed., *Effects of the Second Language on the First*, 247–265. Clevedon: Multilingual Matters.

Kellerman, Eric. 1978. Giving learners a break: Native language intuitions as a source of predictions about transferability. *Working Papers on Bilingualism* 15: 59–92.

Kellerman, Eric. 1983. Now You See It, Now You Don't. In Susan Gass and Lawrence Selinker, eds., *Language Transfer in Language Learning*, 112–133. Rowley, MA: Newbury House.

Kellerman, Eric, and Michael Sharwood Smith, eds., 1986. *Cross-linguistic Influence in Second Language Acquisition*. Elmsford, NY: Pergamon.

Kiklewicz, Aleksander. 2006. Dyfuzja semantyczna w systemie języka i komunikacji językowej. *Palanistyka-Polonistika-Polonistyka*, Mińsk: 13–62.

Klein, Wolfgang. 1994. *Time in Language*. New York: Routledge.

Klein, Wolfgang. 2009. How time is encoded. In Wolfgang Klein and Ping Li, eds., *The Expression of Time*, 39–82. Berlin: Mouton deGruyter.

Kopecka, Anetta. 2006. The semantic structure of motion verbs in French: Typological perspectives. In Maya Hickmann and Stéphane Robert, eds., *Space in Languages*, 83–101. Amsterdam: John Benjamins.

Kopecka, Anetta. 2010. Motion verbs in Polish. Lexicalization patterns and the description of manner. In Victoria Hasko and Renee Perelmutter, eds., *New Approaches to Slavic Verbs of Motion*, 225–246. Amsterdam/Philadelphia: John Benjamins.

Kormos, Judit. 2006. *Speech Production and Second Language Acquisition*. Lawrence Erlbaum Associates, Inc.

Kousta, Stavroula-Thaleia, David P. Vinson and Gabriela Vigliocco. 2008. Investigating linguistic relativity through bilingualism: The case of grammatical gender. *Journal of Experimental Psychology: Learning, Memory and Cognition* 34 (4): 843–858.

Kousta, Stavroula-Thaleia, Gabriela Vigliocco, David. P Vinson and Mark Andrews. 2009. Happiness is… an Abstract Word. The role of affect in abstract knowledge representation, 1115–1120. *Proceedings of the 31st Meeting of the Cognitive Science Society*.

Kövecses, Zoltan. 2006. *Language, Mind and Culture*. Oxford: Oxford University Press.
Kramsch, Claire. 2004. Language, thought and culture. In Alan Davis and Catherine Elder, eds., *Handbook of Applied Linguistics*, 235–261. Oxford: Blackwell Publishing.
Kroll, Judith F. 1993. Accessing conceptual representations for words in a second language. In Robert Schreuder and Bert Weltens, eds., *The Bilingual Lexicon*, 53–81. Amsterdam/Philadelphia: John Benjamins.
Kroll, Judith F., and Erica Stewart. 1994. Category interference in translation and picture naming: Evidence for asymmetric connections between bilingual memory representations. *Journal of Memory and Language* 33: 149–174.
Kroll, Judith F., and Gretchen Sunderman. 2003. Cognitive processes in second language learners and bilinguals: The development of lexical and conceptual representations. In Catherine J. Doughty and Michael H. Long, eds., *The Handbook of Second Language Acquisition*, 104–129. Oxford: Blackwell Publishing.
Kroll, Judith, and Natasha Tokowicz. 2001. The development of conceptual representation for words in a second language. In Janet L. Nicol, ed., *One Mind, Two Languages*, 49–71. Oxford: Blackwell.
Kroll, Judith F., and Natasha Tokowicz. 2005. Models of Bilingual Representation and Processing. Looking Back and to the Future. In Judith F. Kroll and Annette M.B. de Groot, eds., *Handbook of Bilingualism*, 531–553. Oxford: Oxford University Press.
Krucka, Barbara. 2006. *Kontrasty polsko-rosyjskie w zakresie morfologii a zjawiska interferencji.* Łask–Warszawa: Oficyna Wydawnicza LEKSEM.
Kubiszyn-Mędrala, Zofia. n.d. Polskie bezprzedrostkowe czasowniki ruchu w perspektywie kognitywnej. Retrieved March 20, 2010 (http://celta.paris-sorbonne.fr/anasem/papers/Motion.CzasRuch.pdf).
Kurinski, Elena, and Maria D. Sera. 2010. Does learning Spanish grammatical gender change English-speaking adults' categorization of inanimate objects? *Bilingualism: Language and Cognition*, 1–18. (doi: 10.1017/S1366728910000179).
Labov, William. 1973. The boundaries of words and their meanings. In Charles-James Bailey and Roger W. Shuy, eds., *New Ways of Analyzing Variation in English,* 340–373. Washington: Georgetown University Press.
Lakoff, George. 1987. *Women, Fire and Dangerous Things: What Categories Reveal about the Mind*. Chicago: Chicago University Press.
Lakoff, George. 1993. The contemporary theory of metaphor. In Andrew Ortony, ed., *Metaphor and Thought*, 202–251. Cambridge: Cambridge University Press.
Lakoff, George, and Mark Johnson. 1980. *Metaphors We Live By*. Chicago and London: The University of Chicago Press.
Langacker, Ronald W. 1987. *Foundations of Cognitive Grammar.* Stanford: Stanford University Press.
Laskowski, Roman. 1998. Kategorie morfologiczne języka polskiego – charakterystyka funkcjonalna. In Renata Grzegorczykowa, Roman Laskowski and Henryk Wróbel, eds., *Gramatyka współczesnego języka polskiego. Morfologia*, 151–224. Warszawa: Wydawnictwo Naukowe PWN.
Laskowski, Roman. 1999. Czasowniki ruchu liniowego (czasowniki przemieszczania) w pespektywie kontrastywnej. In Zbigniew Greń and Violetta Koseska-Toszewa, eds., *Semantyka a konfrontacja językowa*, 49–58. Warszawa: Slawistyczny Ośrodek Wydawniczy.

Latkowska, Jolanta. 2002. The phenomenon of borrowing in bilingual speech. *Linguistica Silesiana* (23): 85–93.

Latkowska, Jolanta. 2009. Conceptual transfer from a bilingual perspective: Research trends and suggestions. *Linguistica Silesiana* vol. 30: 239–252.

Latkowska, Jolanta. 2010. Cross-Linguistic conceptual influence from a bilingual perspective: In search of research paradigm. In Janusz Arabski and Adam Wojtaszek, eds., *Neurolinguistic and Psycholinguistic Perspectives on SLA*, 106–125. Bristol: Multilingual Matters LTD.

Latkowska, Jolanta. 2011. On the representations of motion events: Perspectives from L2 research. In Mirosław Pawlak and Jakub Bielak, eds., *New Perspectives in Language, Discourse and Translation Studies*, 91–102. Berlin Heidelberg: Springer.

Laufer, Batia. 2003. The influence of L2 on L1 collocational knowledge and on L1 lexical diversity in free written expression. In Vivian Cook, ed., *Effects of the Second Language on the First*, 19–31. Clevedon, UK: Multilingual Matters.

Levelt, Willem J. M. 1989. *Speaking. From Intention to Articulation.* Cambridge, MA: The MIT Press.

Levelt, Willem, J. M. 1999. Producing spoken language: a blueprint of the speaker. In Colin M. Brown and Peter Hagoort, eds., *The Neurocognition of Language*, 83–122. Oxford: Oxford University Press.

Levelt, Willem, J.M., Ardi Roelofs and Antje S. Meyer. 1999. A theory of lexical access in speech production. *Behavioral and Brain Sciences* 22: 1–75.

Levinson, Stephen C. 1997. From outer to inner space: Linguistic categories and non-linguistic thinking. In Eric Pederson and Jan Nuyts, eds., *Language and Conceptualization*, 13–45. Cambridge: Cambridge University Press.

Levinson, Stephen C. 2003a. *Space in Language and Cognition*. Cambridge: Cambridge University Press.

Levinson, Stephen C. 2003b. Language and mind: Let's get the issues straight! In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 25–46. Cambridge, Massachusetts: The MIT Press.

Lewandowska-Tomaszczyk, Barbara. 2008. Asymmetries in participial modification. In Barbara Lewandowska-Tomaszczyk, ed., *Asymmetric Events*, 261–281. Amsterdam: John Benjamins.

Lucy, John. 1992a. *Language Diversity and Thought*. Cambridge: Cambridge University Press.

Lucy, John. 1992b. *Grammatical Categories and Cognition*. Cambridge: Cambridge University Press.

Lucy, John. 1996. The scope of linguistic relativity: An analysis and review of empirical research. In John Gumperz and Stephen Levinson, eds., *Rethinking Linguistic Relativity*. Cambridge: Cambridge University Press.

Lucy, John. 2004. Language, culture and mind in comparative perspective. In Michael Achard and Suzanne Kemmer, eds., *Language, Culture and Mind.* Stanford, CA: CSLI Publications.

Lucy, John. 2011. Language and cognition: The view from anthropology. In Vivian Cook and Benedetta Bassetti, eds., *Language and Bilingual Cognition*, 43–68. New York: Psychology Press.

Lucy, John A., and Suzanne Gaskins. 2003. Interaction of language type and referent type in the development of nonverbal classification preferences. In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 465–492. Cambridge, MA: The MIT Press.

Magnus, Hugo. 1880. Untersuchungen über den Farbensinn der Naturvőlker. *Physiologische Abhandlungen* 2 (7).

Majid, Asifa, Melissa Bowerman, Sotaro Kita and Stephen C. Levinson. 2004. Can language restructure cognition? The case for space. *Trends in Cognitive Sciences* 8 (3): 108–114.

Majid, Asifa, James S. Boster, and Melissa Bowerman. 2008. The cross-linguistic categorization of everyday events: A study of cutting and breaking. *Cognition* 109: 235–250.

Malt, Barbara C., Steven S. Sloman, Silvia Gennari, Meiyi Shi and Yuan Wang. 1999. Knowing versus naming: Similarity and the linguistic categorization of artifacts. *Journal of Memory and Language 40:* 230–262.

Malt, Barbara C., and Steven S. Sloman. 2003. Linguistic diversity and object naming by non-native speakers of English. *Bilingualism: Language and Cognition* 6: 47–67.

Malt, Barbara C., Steven S. Sloman and Silvia P. Gennari. 2003. Speaking versus thinking about objects and actions. In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 81–112. Cambridge, MA: The MIT Press.

Malt, Barbara C., and Steven S. Sloman. 2007. Artefact categorization: The good, the bad and the ugly. In Eric Margolis and Stephen Laurence, eds., *Creations of the Mind: Theories of Artefacts and Their Representation*, 85–123. Oxford: Oxford University Press.

Malt, Barbara C., Silvia P. Gennari, Mutsumi Imai, Eef Ameel, Naoaki Tsuda and Asifa Majid. 2008. Talking about walking: Biomechanics and the language of locomotion. *Psychological Science* 19 (3): 232–240.

Malt, Barbara C., Silvia P. Gennari and Matsumi Imai. 2010. Lexicalization patterns and the world-to-words mapping. In Barbara C. Malt and Phillip Wolff, eds., *Words and the Mind: How Words Encode Human Experience*, 29–57. Oxford: Oxford University Press.

Malt, Barbara C., and Eef Ameel. 2011. The art and science of bilingual object naming. In Aneta Pavlenko, ed., *Thinking and Speaking in Two Languages*, 170–197. Clevedon, UK: Multilingual Matters.

Mandler, Jean M. 2004. *The Foundations of Mind: The Origins of Conceptual Thought.* New York: Oxford University Press.

Morain, Genelle G. 1986. Kinesics and cross-cultural understanding. In Joyce Merrill Valdes, ed., *Culture Bound*, 64–76. Cambridge: Cambridge University Press.

Nagórko, Alicja. 1998. *Zarys gramatyki polskiej*. Warszawa: PWN.

Noppeney, Uta, and Cathy J. Price. 2004. Retrieval of abstract semantics. *Neuroimage* 22: 164–170.

Noyau, Colette, Christina de Lorenzo, Maria Kihlstedt, Urszula Paprocka, Gema Sanz Espinar and Ricards Schneider. 2005. Two dimensions of the representation of complex event structures: Granularity and condensation. Towards a typology of

textual production in L1 and L2. In Henriette Hendricks, ed., *The Structure of Learner Language*, 157–202. Berlin: De Gruyter.

Nuyts, Jan, and Eric Pederson, eds., 1997. *Language and Conceptualization*. Cambridge: Cambridge University Press.

Nüse, Ralf. 2003. Segmenting event sequences for speaking. In Holden Härtl and Heike Tappe, eds., *Mediating between Concepts and Grammar*, 255–276. Berlin: Mouton de Gruyter.

Odlin, Terence. 1989. *Language Transfer. Cross-linguistic Influence in Language Learning.* Cambridge: Cambridge University Press.

Odlin, Terence. 2003. Cross-linguistic influence. In Catherine J. Doughty and Michael H. Long, eds., *The Handbook of Second Language Acquisition*, 436–486. Oxford: Blackwell.

Odlin, Terence. 2005. Cross-linguistic Influence and Conceptual Transfer: What are the Concepts? *Annual Review of Applied Linguistics* 25: 3–25.

Odlin, Terence. 2010. Conclusion: On the interdependence of conceptual transfer and relativity studies. In ZhaoHong Han and Teresa Cadierno, eds., *Linguistic Relativity in SLA. Thinking for Speaking*, 183–192. Clevedon, UK: Multilingual Matters.

Ohara, Kyoko. 2004. Manner of motion in Japanese and English. Paper presented at the Third International Conference on Construction Grammar. Marseille, France.

Otheguy, Ricardo, and Ofelia Garcia. 1993. Convergent conceptualizations as predictors of degree of contact in U.S. Spanish. In Ana Roca and John Lipski, eds., *Spanish in the US: Linguistic Contact and Diversity*, 135–154. Berlin: DeGruyter.

Otwinowska-Kasztelanic, Agnieszka. 2000. *A Study of the Lexico-Semantic and Grammatical Influence of English on the Polish of the Younger Generation of Poles (19–35 years of age).* Warszawa: Dialog.

Oxford Quick Placement Test. 2001. Oxford: Oxford University Press.

Özyürek, Ash, Shanley Allen, Sotaro Kita, Amanda Brown, Reyhan Furman, Tomoko Ishizuka and Fujii Mihoko. 2008. Development of cross-linguistic variation in speech and gesture: Motion events in English and Turkish. *Developmental Psychology* 44 (4): 1040–1054.

Paivio, Allan. 1991. *Images in Mind*. New York: Harvester.

Papafragou, Anna, Christine Massey and Lila Gleitman. 2006. When English proposes what Greek presupposes: The cross-linguistic encoding of motion events. *Cognition* 98: 75–87.

Papafragou, Anna, Justine Hulbert and John Trueswell. 2008. Does language guide perception? Evidence from eye movements. *Cognition* 108: 155–184.

Papafragou, Anna, and Stathis Selimis. 2010. Event categorization and language: A cross-linguistic study of motion. *Language and Cognitive Processes* 25: 224–260.

Paradis, Michel. 2000. Cerebral Representation of Bilingual Concepts. *Bilingualism: Language and Cognition* 3 (1): 22–24.

Paradis, Michel. 2004. *A Neurolinguistic Theory of Bilingualism*. Amsterdam: John Benjamins.

Paradis, Michel. 2007. The neurofunctional components of the bilingual cognitive system. In Istvan Kecskes and Liliana Albertazzi, eds., *Cognitive Aspects of Bilingualism*, 3–28. Dordrecht: Springer.

Paradis, Michel. 2008. Bilingual effects are not unique, only more salient. *Bilingualism: Language and Cognition* 11 (2): 181–183.

Pavlenko, Aneta. 1999. New Approaches to Concepts in Bilingual Memory. *Bilingualism: Language and Cognition* 2: 209–231.

Pavlenko, Aneta. 2003. I feel clumsy speaking Russian': L2 influence on L1 in narratives of Russian L2 users of English. In Vivian Cook, ed., *Effects of the Second Language on the First*, 32–61. Clevedon, UK: Multilingual Matters.

Pavlenko, Aneta. 2005. Bilingualism and thought. In Judith F. Kroll and Annette M.B. de Groot, eds., *Handbook of Bilingualism: Psycholinguistic Approaches*, 433–453. Oxford: Oxford University Press.

Pavlenko, Aneta. 2008a. Narrative analysis. In Li Wei and Melissa G. Moyer, eds., *The Blackwell Guide to Research Methods in Bilingualism and Multilingualism*, 311–325. Oxford: Blackwell Publishing.

Pavlenko, Aneta. 2008b. Emotion and emotion-laden words. *Bilingualism: Language and Cognition* 11 (2): 147–164.

Pavlenko, Aneta. 2009. Conceptual representation in the bilingual lexicon and second language vocabulary learning. In Aneta Pavlenko, ed., *The Bilingual Mental Lexicon. Interdisciplinary Approaches*, 125–160. Clevedon: Multilingual Matters.

Pavlenko, Aneta. 2010. Verbs of motion in L1 Russian of Russian-English bilinguals. *Bilingualism: Language and Cognition* 13 (1): 49–62.

Pavlenko, Aneta. 2011a. (Re-)naming the world: Word-to-referent mapping in second language speakers. In Aneta Pavlenko, ed., *Thinking and Speaking in Two Languages*, 198–236. Clevedon, UK: Multilingual Matters.

Pavlenko, Aneta. 2011b. Thinking and speaking in two languages: Overview of the field. In Aneta Pavlenko, ed., *Thinking and Speaking in Two Languages*, 237–257. Clevedon, UK: Multilingual Matters.

Pavlenko, Aneta, and Barbara Malt. 2011. Kitchen Russian: Cross-linguistic differences and first-language object naming by Russian-English bilinguals. *Bilingualism: Language and Cognition* 14 (1): 19–45.

Pederson, Eric, Eve Danzinger, David Wilkins, Sotaro Kita and Gunter Senft. 1998. Semantic typology and spatial configuration. *Language* 74: 557–589.

Pourcel, Stephanie. 2003. Linguistic relativity and motion events in English. *Durham Working Papers in Linguistics*, 9: 53–67.

Pourcel, Stephanie, and Anetta Kopecka. 2005. Motion expression in French: Typological diversity. *Durham & Newcastle Working Papers in Linguistics*, 11: 139–153.

Pourcel, Stephanie. 2009. Motion scenarios in cognitive processes. In Vyvyan Evans and Stephanie Pourcel, eds., *New Directions in Cognitive Linguistics*, 371–394. Amsterdam: John Benjamins.

Ramos, Sara, and Debi Roberson. 2011. What constrains grammatical gender effects on semantic judgements? Evidence from Portuguese. *Journal of Cognitive Psychology* 23(1): 102–111.

Regier, Terry, Paul Kay, and Richard S. Cook. 2005. Focal colors are universal after all. *PNAS* 102 (23): 8386–8391.

Regier, Terry, and Paul Kay. 2009. Language, thought, and color: Whorf was half right. *Trends in Cognitive Sciences* 13: 439–446.

Reichenbach, Hans. 1947. *Elements of Symbolic Logic*. London: Macmillan.
Riemer, Nick. 2010. *Introducing Semantics.* Cambridge: Cambridge University Press.
Ringbom, Håkan. 1987. *The Role of the First Language in Foreign Language Learning.* Clevedon: Multilingual Matters.
Roberson, Debie, Jules Davidoff and Ian Davies. 2000. Color categories are not universal: replication and new evidence from a Stone-age culture. *Journal of Experimental Psychology*, *General* 129: 369–398.
Roberson, Debie, Jules Davidoff and Laura Shapiro. 2002. Squaring the circle: The cultural relativity of 'good' shape. *Journal of Cognition and Culture* 2: 29–53.
Roberson, Debie, Jules Davidoff, Ian Davies and Laura Shapiro. 2005. Color categories: Evidence for the cultural relativity hypothesis. *Cognitive Psychology* 50: 378–411.
Roberson, Debie, Richard J. Hanley and Hyensou Pak. 2008. Categorical perception of colour in the left and right field is verbally mediated: Evidence from Korean. *Cognition* 107: 752–762.
Roberson, Debi, and Richard J. Hanley 2010. Relatively speaking: An account of the relationship between language and thought in the color domain. In Barbara C. Malt and Phillip Wolff, eds., *Words and the Mind: How Words Encode Human Experience*, 183–198. Oxford: Oxford University Press.
Roelofs, Ardi. 2000. Word meanings and concepts: What do the findings from aphasia and language specificity really say? *Bilingualism: Language and Cognition* 3 (1): 5–27.
Roelofs, Ardi, Antje S. Meyer and Willem J.M. Levelt. 1998. A case for the lemma/lexeme distinction in models of speaking: Comment on Caramazza and Miozo (1997). *Cognition* 69: 219–230.
Romaine, Susanne. 1995. *Bilingualism*. Oxford: Blackwell Publishing.
Rosch Heider, Eleanor. 1972. Universals in color naming and memory. *Journal of Experimental Psychology* 93: 10–20.
Rosch, Eleanor. 1973. Natural categories. *Cognitive Psychology* 4: 328–350.
Rosch, Eleanor. 1975. Cognitive representations of semantic categories. *Journal of Experimental Psychology: General* 104 (3): 192–233.
Rosch, Eleanor. 1977. Human Categorization. In Neil Warren, ed., *Studies in Cross-cultural Psychology*, 78–92. New York: Academic Press.
Rosch, Eleanor. 1978. Principles of Categorization. In Eleanor Rosch and Barara Lloyd, eds., *Cognition and Categorization*, 27–48. Hillsdale, N.J.: Erlbaum.
Sachs Stepanova, Olga, and John D. Coley. 2006. Envy and jealousy in Russian and English: Labelling and conceptualization of emotions by bilinguals and monolinguals. In Aneta Pavlenko, ed., *Bilingual Minds. Emotional Experience, Expression and Representation*, 183–208. Clevedon: Multilingual Matters.
Saeed, John I. 2003. *Semantics*. Oxford: Blackwell.
Salamoura, Angeliki, and John N. Williams. 2007. The representation of grammatical gender in the bilingual lexicon: Evidence from Greek and German. *Bilingualism: Language and Cognition* 10 (3): 257–275.
Sapir, Edward. 1949. *An Introduction to the Study of Speech*. New York: Harcourt, Brace & Company.
Scheutz, Matthias J., and Kathleen M. Eberhard. 2004. Effects of morphosyntactic gender features in bilingual language processing. *Cognitive Science* 28: 559–588.

Schmiedtová, Barbara. 2004. *At The Same Time: The Expression of Simultaneity in Learner Varieties*. Berlin: Walter de Gruyter.

Schmiedtová, Barbara, and Monique Flecken. 2008. Aspectual concepts across languages: Some considerations for second language learning. In Sabine De Knop and Teun De Rycker, eds., *Cognitive Approaches to Pedagogical Grammar*, 357–384. Berlin: Mounton de Gruyter.

Schmiedtová, Barbara, Christiane von Stutterheim and Mary Carroll. 2011. Language-specific patterns in event construal of advanced second language speakers. In Aneta Pavlenko, ed., *Thinking and Speaking in Two Languages*, 29–65. Bristol: Multilingual Matters.

Sera, Maria D., Christian A. Berge and Javier del Castillo Pintado. 1994. Grammatical and conceptual forces in the attribution of gender by English and Spanish speakers. *Cognitive Development* 9 (3): 261–292.

Sera, Maria D., Elieff Chryle Burch, Melissa Clark, James Forbes and Wanda Rodriguez. 2002. When language affects cognition and when it does not: An analysis of grammatical gender and classification. *Journal of Experimental Psychology: General* 131 (3): 377–397.

Shinohara, Kazuko, and Yoshihiro Matsunaka. 2009. Pictorial metaphors of emotion in Japanese comics. In Charles J. Forceville and Eduardo Urios-Aparisi, eds., *Multimodal Metaphor*, 265–293. Berlin: Mouton De Gruyter.

Short-Morgan, Kara, Karsten Steinhauer, Cristina Sanz and Michael T. Ullman. 2012. Explicit and implicit second language training differentially affect the achievement of native-like brain activation patterns. *Journal of Cognitive Neuroscience* 24 (4): 933–947.

Sikora, Dorota. 2007. May an event approach be useful in dealing with Polish motion verbs? Retrieved March 19, 2010 (http://languages.uchicago.edu/scla/abstracts/SikoraSCLA2007.pdf.)

Singleton, David. 1999. *Exploring the Second Language Mental Lexicon*. Cambridge: Cambridge University Press.

Slobin, Dan. I. 1996. From "thought and language" to "thinking for speaking." In John J. Gumperz and Stephen. C. Levinson, eds., *Rethinking Linguistic Relativity*, 70–96. Cambridge: Cambridge University Press.

Slobin, Dan. I. 2003. Language and thought on line: Cognitive consequences of linguistic relativity. In Dedre Gentner and Susan Goldin-Meadow, eds., *Language and Mind. Advances in the Study of Language and Thought*, 157–192. Cambridge, MA: The MIT Press.

Slobin, Dan. I. 2004. The many ways to search for a frog: Linguistic typology and the expression of motion events. In Sven Strömqvist and Ludo Verhoeven, eds., *Relating Events in Narrative: Vol. 2. Typological and Contextual Perspectives*, 219–257. Mahwah, NJ: Lawrence Erlbaum.

Slobin, Dan. I. 2005. Linguistic representations of motion events: What is signifier and what is signified? In Constantino Maeder, Olga Fischer and William J. Herlofsky, eds., *Iconicity Inside Out: Iconicity in Language and Literature* 4, 307–322. Amsterdam/Philadelphia: John Benjamins.

Slobin, Dan. I. 2006. What makes manner of motion salient? Explorations in linguistic typology, discourse, and cognition. In Maya Hickmann and Stephanie Robert, eds.,

Linguistic Systems and Cognitive Categories, 59–81. Amsterdam/Philadelphia: John Benjamins.

Smith, Carlota S. 1991. *The Parameter of Aspect*. Dordrecht: Kluwer Academic Publishers.

Spencer, Andrew, and Marina D. Zaretskaya. 1998. Verb prefixation in Russian as lexical subordination. *Linguistics* 36: 1–39.

Stam, Gale A. 2010. Can an L2 speaker's patterns of thinking for speaking change? In ZhaoHong Han and Teresa Cadierno, eds., *Linguistic Relativity in SLA. Thinking for Speaking*, 59–83. Clevedon, UK: Multilingual Matters.

Stapel, Diederik A., and Gün R. Semin. 2007. The magic spell of language: Linguistic categories and their conceptual consequences. *Journal of Personality and Social Psychology* 93 (1): 23–33.

Stutterheim, Christiane von. 2003. Linguistic structure and information organization: The case of very advanced learners. *EUROSLA Yearbook* 3: 183–206.

Stutterheim, Christiane von, and Ralf Nüse. 2003. Processes of conceptualization in language production: Language-specific perspectives and event construal. *Linguistics* 41: 851–881.

Stutterheim, Christiane von, and Mary Carroll. 2006. The impact of grammatical temporal categories on ultimate attainment in L2 learning. In Heidi Byrnes, Heather Weger-Guntharp and Katherine Sprang, eds., *Educating for Advanced Foreign Language Capacities*, 40–53. Washington, DC: Georgetown University Press.

Stutterheim, Christiane von, Mary Carroll and Wolfgang Klein. 2009. New perspectives in analyzing aspectual distinctions across languages. In Wolfgang Klein and Ping Li, eds., *The Expression of Time*, 195–216. Berlin: Mounton de Gruyter.

Swan, Michael. 2005. *Practical English Usage*. Oxford: Oxford University Press.

Swoyer, Chris. 2011. How does language affect thought? In Vivian Cook and Benedetta Bassetti, eds., *Language and Bilingual Cognition*, 23–41. New York: Psychology Press.

Sysak-Borońska, Maria G. 1974. Some remarks on the spatio-relative system in English and Polish. *Poznan Studies in Contemporary Linguistics.* Volume 3: 185–208.

Szwedek, Aleksander. 2009. Ontogenetic and phylogenetic explanations of metaphorization. In Maria Wysocka, ed., *On Language Structure, Acquisition and Teaching*, 202–210. Katowice: Wydawnictwo Uniwersytetu Śląskiego.

Talmy, Leonard. 1985. Lexicalization patterns: semantic structure in lexical forms. In Tymothy Shopen, ed., *Language Typology and Syntactic Description. Volume III: Grammatical Categories and the Lexicon*, 57–149. Cambridge: Cambridge University Press.

Talmy, Leonard. 2000. *Toward a Cognitive Semantics: Vol. I. Concept Structuring Systems.* Cambridge, MA: MIT Press.

Talmy, Leonard. 2003. *Toward a Cognitive Semantics: Vol. II. Typology and Process in Concept Structuring.* Cambridge, MA: The MIT Press.

Talmy, Leonard. 2008. Aspects of attention in language. In Peter Robinson and Nick C. Ellis, eds., *Handbook of Cognitive Linguistics and Second Language Acquisition*, 27–38. New York: Routledge.

Tan, Li Hai, Alice Chan, Paul Kay, Pek-Lan Khong, Lawrence Yip and Luke Kang-Kwong. 2008. Language affects patterns of brain activation associated with perceptual decision. *PNAS* 15 (10): 4004–4009.

Taylor, John R. 1995. *Linguistic Categorization.* Oxford: Clarendon Press.
The Oxford 3000 Wordlist. Retrieved May 20, 2008 (http://www.oup.com/elt/catalogue/teachersites/oald7/oxford_3000/oxford_3000_list?view=Print&cc=global).
Tobin, Shinai. 1993. *Aspect in the English Verb*. London: Longman.
Trueswell, John C., and Anna Papafragou. 2010. Perceiving and remembering events cross-linguistically: Evidence from dual-task paradigms. *Journal of Memory and Language* 63: 64–82.
Tsujimura, Natsuko. 2007. *An Introduction to Japanese Linguistics*. Oxford: Blackwell.
Ungerer, Friedriech, and Hans-Jőrg Schmid. 2006. *An Introduction to Cognitive Linguistics.* London: Pearson Longman.
Van Heuven, Walter J. B., Ton Dijkstra and Jonathan Grainger. 1998. Orthographic neighbourhood effects in bilingual word recognition. *Journal of Memory and Language* 39 (3): 458–483.
Verbeemen, Timothy, Wolf Vanpaemel, Sven Pattyn, Gert Storms and Tom Verguts. 2007. Beyond exemplars and prototypes as memory representations of natural concepts: A clustering approach. *Journal of Memory and Language* 56 (4): 537–554.
Vigliocco, Gabriella, David P. Vinson, Federica Paganelli and Katharina Dworzynski. 2005. Grammatical effects of gender on cognition: Implications for language learning and language use. *Journal of Experimental Psychology* 134 (4): 501–520.
Wei, Li, and Melissa G. Moyer, eds. 2008. *The Blackwell Guide to Research Methods in Bilingualism and Multilingualism*. Oxford: Blackwell Publishing.
Weinreich, Uriel. 1953. *Languages in Contact*. The Hague: Mounton.
White, Lydia. 1989. *Universal Grammar and Second Language Acquisition*. Amsterdam: John Benjamins.
Whorf, Benjamin Lee. 1956. *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf.* Cambridge, MA: The MIT Press.
Wierzbicka, Anna. 1985. *Lexicography and Conceptual Analysis.* Ann Arbor, MI: Karoma.
Wierzbicka, Anna. 1992. *Semantics, Culture and Cognition.* Oxford: Oxford University Press.
Wierzbicka, Anna. 1996. *Semantics. Primes and Universals*. Oxford: Oxford University Press.
Wierzbicka, Anna. 1997. *Understanding Cultures through Their Key Words.* Oxford: Oxford University Press.
Wierzbicka, Anna. 1999. *Emotions across Languages and Cultures.* Cambridge: Cambridge University Press.
Wierzbicka, Anna. 2005. Universal human concepts as a tool for exploring bilingual minds. *International Journal of Bilingualism* 9 (1): 7–26.
Wierzbicka, Anna. 2007. *Słowa klucze. Różne języki – różne kultury.* Warszawa: Wydawnictwo Uniwersytetu Warszawskiego.
Wierzbicka, Anna. 2008. A conceptual basis for research into emotions and bilingualism. *Bilingualism: Language and Cognition* 11 (2): 193–195.
Wierzbicka, Anna. 2009. The theory of the mental lexicon. In Tilman Berger, Karl Gutschmidt, Sebastian Kempgen and Peter Kosta, eds., *The Slavic Languages: An International Handbook of Their History, Their Structure and Their Investigation*, 848–862. Berlin: Mouton deGruyter.

Willim, Ewa. 2006. *Event Individuation and Countability. A Study with Special Reference to English and Polish*. Kraków: Jagiellonian University Press.

Winawer, Jonathan, Nathan Witthoft, Michael C. Frank, Lisa Wu and Lera Boroditsky. 2007. Russian blues reveal effects of language on color discrimination. *PNAS* (doi: 10.1073/pnas.0701644104).

Winawer, Jonathan, Alexander C. Huk and Lera Boroditsky. 2008. A motion after-effect from still photographs depicting motion. *Psychological Science* 19 (3): 276–283.

Wittgenstein, Ludwig. 1953. *Philosophical Investigations.* Oxford: Blackwell.

Wolff, Phillip, and Barbara C. Malt. 2010. The language-thought interface. An introduction. In Barbara C. Malt and Phillip Wolff, eds., *Words and the Mind: How Words Encode Human Experience*, 3–15. Oxford: Oxford University Press.

Sachiko, Yasuda, 2011. Genre-based tasks in foreign language writing: Developing writers' genre awareness, linguistic knowledge, and writing competence. *Journal of Second Language Writing* 20 (2): 111–133.

Yeh, David, and Derdre Gentner. 2005. Reasoning counterfactually in Chinese: Picking up the pieces. *Proceedings of the Twenty-seventh Annual Meeting of the Cognitive Science Society*, 2410–2415.

Online resources

Corpus of Contemporary American English (http://corpus.byu.edu/coca/)
Corpus of Historical American English (http://corpus.byu.edu/coha/)
www.lextutor.ca
PELCRA Lista frekwencyjna języka polskiego

Index

Abstract concepts 29, 31, 40, 54, 102–103, 105, 180
Acquaintance 119, 135–136, 138–146
Aktionsart 184, 207
Anaphoric structuring 82, 207, 229–230
Atelic 64, 86, 112

Bilingual lexicon 15–21, 243
Blueprint for the Speaker 80,183

Cognitive grammar 245
Colleague 118–119, 134–146, 161
Colour 51–53
Concept 21–31, 102–106, 109–110, 240–241
Conceptual equivalence 32, 115
Conceptual metaphor 27–28, 54, 103, 172
Conceptual transfer 39, 45–47, 181–182, 240–245
Conceptual Transfer Hypothesis 100–114, 117, 180
Conceptualization 42, 79–84, 87–90, 100, 111, 181–182
Concrete concepts 40, 103
Convergence 42, 76, 110, 206, 229, 231

Deictic structuring 82, 85, 206, 213, 233–234, 237
Directed motion verbs 67–69, 183–202

Endpoint 64, 69, 72, 80–88
Event construal 84, 86, 207, 210
Exemplar 23–24, 25, 90
Explication 39–40, 118–121
Eye tracking 71–72, 83, 92, 182, 242

Film retelling 76, 81, 102, 111, 207, 237
Focal colours 51–53, 91
Foreign discourse accent 89, 244
Frame 21, 26–27
Friend 117–118, 134–136, 138–146

Gestural communication 54, 66, 74–75, 79
Grammatical aspect 82–87, 89, 183–184, 207
Granularity 80, 84, 206, 215, 221, 232–234
Grounded cognition 30–31

Hierarchical Model of Bilingual Memory 15–17

Imperfective aspect 79, 82–87, 184, 206–215, 224, 233–237

Kolega 120, 136–138, 147–154

Learning context 234–236
Lemmatic transfer 43–44
Lexemic transfer 43–44
Lexical(ized) concept 31–33, 41
Linguistic determinism 35, 49–50
Linguistic relativity 41, 45–46, 49–62, 90–98

Macroplanning 81, 202, 204
MANNER-verbs 64–68, 72, 76–77, 188–200
Meaning transfer 46
Mental lexicon 14–21
Microplanning 81, 89
Modified Hierarchical Model of Bilingual Memory 33–35
Multi-competence 134, 243

Naming 45, 60, 90–95, 104–111, 115–117, 122, 133–171
Natural Semantic Metalanguage 36–40

Ongoingness 79, 81–87, 184, 214–215, 237–238

PATH-verbs 63–72, 188–204
Phasal decomposition 81–86, 207, 215
Polish 67–70, 85–87, 119–121, 233–234
Progressive aspect 79, 88–90, 206, 233–234
Prototype 23–26
Przyjaciel 119–120, 136–138, 147–154

Restructuring 33–34, 57–61, 96, 110, 162–165

Sapir-Whorf Hypothesis 49–62, 90–98
Satellite-framed languages 63–67
Segmentation 80–84, 205–206
Selection 81, 183–184
Semantic primes/primitives 36–38
Semantic transfer 42–45
Simulation 30–31
Situated conceptualization 31
Space 53–55
Structuring 82, 89, 206–208

Telic 64–65
Thinking for Speaking 62–79, 182–193, 242
Timeline 80–81, 206–236

Verb-framed languages 63–67

Znajomy 121, 136–138, 147–154

Jolanta Latkowska

Na styku myśli i dwujęzyczności
Ocena hipotezy transferu konceptualnego

Streszczenie

Praca podejmuje temat wpływu języka na kategorie konceptualne u osób dwujęzycznych. Poruszana problematyka omawiana jest na podstawie najnowszych teorii pamięci bilingwalnej oraz stworzonej na ich kanwie hipotezy transferu konceptualnego autorstwa Scotta Jarvisa i Anety Pavlenko.

Część teoretyczna przedstawia strukturę pamięci bilingwalnej, zwanej również słownikiem wewnętrznym, modele sfery konceptualnej oraz istniejące pomiędzy poziomem językowym i konceptualnym zależności. Te ostatnie rozpatrywane są przez pryzmat teorii względności językowej i jej zmodyfikowanych wersji: teorii „myślenie dla mowy" (ang. *Thinking for Speaking*) Dana Slobina, jak również hipotezy Christiane von Stutterheim. Ostatnim elementem dyskusji jest prezentacja hipotezy transferu konceptualnego oraz jej ocena pod kątem merytorycznym i empirycznym.

Część badawcza przedstawia dwa projekty zrealizowane zgodnie z zaleceniami autorów hipotezy transferu konceptualnego. Projekt 1. dotyczy kategoryzacji semantycznej oraz niewerbalnej. Badane kategorie semantyczne oparte są na eksplikacjach Anny Wierzbickiej i dotyczą relacji międzyludzkich (przyjaciel, *friend*, kolega itd.). Projekt 2. to analiza ram konceptualizacyjnych pod kątem wydarzeń przedstawiających ruch ukierunkowany oraz konstrukcji narracji w pisemnych relacjach z obejrzanego filmu animowanego. Uzyskane dane w języku polskim i angielskim stanowią podstawę wniosków, które zaprezentowano w ostatnim rozdziale pracy.

Badania przeprowadzono w Polsce i krajach anglojęzycznych (w Anglii i Irlandii). W skład badanych populacji weszli monolingwalni Polacy i rodzimi użytkownicy języka angielskiego (ang. *native speakers*) oraz Polacy posługujący się językiem angielskim w warunkach naturalnych (emigranci) i szkolnych (studenci filologii angielskiej). Każda z grup monolingwalnych uczestniczyła w sesjach badawczych dotyczących odpowiednio języka polskiego i angielskiego. Osoby dwujęzyczne testowane były w obydwu językach. Dane zebrano za pomocą scenariuszy sytuacyjnych, kwestionariuszy, oceny podobieństwa, a także opisu narracyjnego krótkometrażowego filmu animowanego pt. *Katedra* w reżyserii Tomasza Bagińskiego.

Jolanta Latkowska

An der Berührungsfläche zwischen dem Denken und der Zweisprachigkeit Die Bewertung von der Hypothese des konzeptuellen Transfers

Zusammenfassung

In ihrer Monografie befasst sich die Verfasserin mit dem Einfluss der Sprache auf konzeptuelle Kategorien der zweisprachigen Personen. Sie bespricht die neuesten Theorien über bilinguales Gedächtnis und die auf dessen Grundlage von Scott Jarvis und Aneta Pavlenko aufgestellte Hypothese des konzeptuellen Transfers.

Der theoretische Teil der Arbeit bringt uns die Struktur des bilingualen Gedächtnisses, auch ein inneres Wörterbuch genannten wird, die Modelle des konzeptuellen Bereiches und die zwischen der sprachlichen und konzeptuellen Ebene bestehenden Zusammenhänge näher. Letztgenannte werden hier unter dem Gesichtspunkt der Theorie der Sprachrelativität und deren modifizierten Varianten: der Theorie „Denken für Sprechen" (engl.: *Thinking for Speaking*) von Dan Slobin und der Hypothese von Christiane von Stutterheim dargestellt. Das letzte in dem Teil diskutierte Element ist die Darstellung der Hypothese des konzeptuellen Transfers und deren sachliche und empirische Beurteilung.

Der Forschungsteil beinhaltet zwei den Empfehlungen der Autoren von der Hypothese des konzeptuellen Transfers gemäß ausgearbeiteten Projekte. Der erste von ihnen betrifft semantische und nonverbale Kategorisierung. Die hier untersuchten Kategorien basieren auf Erläuterungen von Anna Wierzbicka und betreffen zwischenmenschliche Beziehungen (Freund, Kollege usw.) Im anderen Projekt werden konzeptualistische Rahmen hinsichtlich der Lexikalisierung von den eine zielführende Bewegung darstellenden Ereignissen und der Erzählungsstruktur in schriftlichen Rezensionen des Zeichentrickfilms untersucht. Die im Polnischen und in Englischen erreichten Daten sind die Grundlage für die im letzten Kapitel der Monografie dargestellten Schlussfolgerungen.

Die Untersuchungen wurden in Polen und in englischsprachigen Ländern (England und Irland) durchgeführt. Unter Untersuchungspersonen waren einsprachige Polen, englische Muttersprachler (engl.: *native speakers*) und die die englische Sprache auf natürlichem Wege (Emigranten) und in der Schule (Studenten der englischen Philologie) beherrschten Polen. Jede einsprachige Gruppe nahm an den die polnische oder englische Sprache betreffenden Forschungssitzungen teil. Bilinguale Personen waren in den beiden Sprachen während separater Sitzungen getestet. Die Daten wurden mittels Situationsprogramme, Fragebögen, der Ähnlichkeitsbeurteilung und des Zeichentrickkurzfilms Katheder unter der Regie von Tomasz Bagiński erreicht.

Copy editor
Krystian Wojcieszuk

Technical editor and cover designer
Małgorzata Pleśniar

Typesetting and text make up
Marek Zagniński

ISSN 0208-6336
ISBN 978-83-226-2190-5

Published by
Wydawnictwo Uniwersytetu Śląskiego
ul. Bankowa 12B, 40-007 Katowice
www.wydawnictwo.us.edu.pl
e-mail: wydawus@us.edu.pl

First impression. Printed sheets 18.0. Publishing sheets 23.0. Offset paper, grade III, 90 g Price 34 zł

Printing and binding: PPHU TOTEM s.c.
M. Rejnowski, J. Zamiara
ul. Jacewska 89, 88-100 Inowrocław

Price 34 zł
(+ VAT)

ISSN 0208-6336
ISBN 978-83-226-2190-5